

A POSITIVE DEVIANCE APPROACH TO AN AFTER-SCHOOL NUTRITION CURRICULUM FOR ELEMENTARY STUDENTS



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ABSTRACT

The United States Department of Agriculture Economic Research Service found that in the year of 2018, 11.1% of households in the United States were food insecure (USDA, 2019). It was also found that 1 in 6 children in the United States live in a food insecure household (Garner, 2016). Food insecurity is the uncertainty of having, or unable to acquire enough food to meet the needs of their members because of insufficient money or other resources for food at times during the year (Garner, 2016). In the Ogden, Utah, the city in which this curriculum will be implemented, 62% of the population is low income and 27% of those households are receiving Supplemental Nutrition Assistance Program benefits as well (Social Determinates, 2019). Over half of the households in Ogden receiving SNAP have dependent children. Ogden has the highest population of People of Color (POC) at 38.48%. The curriculum is designed with positive deviance as its base. Positive deviance is an innovative behavior change approach that is based upon the premise that populations include individuals who arrive at novel solutions by employing uncommon, beneficial practice, despite having no extra resources or

knowledge than the people within their community. The purpose behind creating this nutrition curriculum for local Ogden City Schools who are a part of OgdenCAN, is to combat intergenerational poverty, specifically food insecurity. Students will partake in a nine-month program where they will meet two times per week, and learn topics such as general nutrition, healthy recipe creation, and



where our food comes from. The curriculum is designed to fulfill health education standards in the state of Utah, including literacy, English Language Arts (ELA) and mathematic standards.

NATURE OF THE PROBLEM

With an estimated 11.1% of households in the United States being food insecure at some point during the year in 2018, it is safe to say this is no small problem (USDA, 2019). The United States Department of Agriculture (USDA) has defined food insecurity as having an “uncertainty of having, or unable to acquire enough food to meet the needs of their members because of insufficient money or other resources for food at times during the year” (Garner, 2016, p. 2). To compound this issue, among households with children who

The United States Department of Agriculture (USDA) has defined food insecurity as having an “uncertainty of having, or unable to acquire enough food to meet the needs of their members because of insufficient money or other resources for food at times during the year”

were under the age of 18 years old, about 19.2% of those homes were food insecure (Garner, 2016). That means that at some point during the year one in five school-age children are food insecure. Rates of food insecurity from 2001 to 2014 were highest among Black non-Hispanics (23%), and Hispanic groups (22.9%). Caucasians experienced a food insecurity rate of 11.4%, well below the national average at the time (Garner, 2016). In the Ogden, Utah, the city in which this curriculum will be implemented, 62% of the population is low income and 27% of those

households are receiving Supplemental Nutrition Assistance Program benefits as well (Social Determinates, 2019). Over half of the households in Ogden receiving SNAP have dependent children. Ogden has the highest population of People of Color (POC) at 38.48% with most of those individuals being of Hispanic or Latino decent (Social Determinates, 2019). As the research Garner (2016) suggests, food insecurity in Ogden is a relevant issue. Resources for food insecure families such as The Supplemental Nutrition Assistance Program (SNAP) can be helpful for families who are food insecure, but it is not a solution to the problem. Despite national spending of \$65 billion on SNAP alone, 12.5 million U.S. children still live in households that experience food insecurity (Fernald & Gosliner, 2019). Spending billions of dollars on programs to fight food insecurity is not the answer.

A potential answer to helping food insecure families, especially those with children, is a nutritional curriculum that utilizes a positive deviance approach. Positive deviance is an innovative behavior change approach that is based on the idea that populations include individuals who are able to arrive at novel solutions by employing uncommon, beneficial practice, despite facing similar challenges and having no extra resources or knowledge than their peers (Sosanya, Adeosun, Okafor & Ifitezue, 2017). Positive Deviance is a method that has yet to be introduced into school curriculums so examples of its use in the United States are non-existent. However, examples of positive deviance being used to improve food security can be found around

the world. One example is mothers in communities struck by poverty and food insecurity in Vietnam going out every day to nearby rice paddies and collecting tiny shrimps and crabs, which they would add to their children's meals to provide them with more food. They would also feed their children three or four times a day, rather than the customary twice a day in that area (Sternin & Choo, 2000). This method is low cost with high return-on-investment because it emphasizes a community's resources in solving its own problems (Lindberg & Clancy, 2010). Positive deviance has been indicated to produce high success rates in tackling food insecurity (Sosanya et al., 2017).

Since there are not many educational curriculums developed that use positive deviance as its base, there are no curriculums exploring options to assist in food insecurity. Therefore, with the guidance of the Weber-Morgan Health Department and Ogden City School District a nutrition curriculum using positive deviance was created in order to fill this gap in educational curriculum. The behavioral and developmental issues that are a symptom of malnutrition in infancy and childhood have been well researched (Cook et al., 2004). Interruptions to a child's nutrition, if not treated early, can result in deficiencies in physical size, cognitive growth, fine motor skills, and impairments in academic performance, and self-regulation (Cook et al., 2004; Ke & Ford-Jones, 2015). Food insecure children have also been found to make 20% less money in adulthood when compared to non-food insecure children (Sosanya et. al, 2017). It is for these reasons that the creation of a nutrition curriculum using positive deviance is critical.

LITERATURE REVIEW

Food Insecurity

Food insecurity is a problem that not only affects developing countries, but wealthier countries as well, such as the United States of America. This public health problem is unfortunately not a new phenomenon and in 2018, according to the United States Department of Agriculture Economic Research Service, 11.1% of households in the United States were food insecure at least some time during the year (USDA, 2019). Eleven percent is down from 14% that was reported in 2014, which is good news, but that still leaves well over 14 million households that were food insecure (USDA, 2019; Garner, 2016).

The USDA defines food insecurity as "uncertainty of having, or unable to acquire enough food to meet the needs of their members because of insufficient money or other resources for food at times during the year" (Garner, 2016). Simply put, food insecurity is a lack of access to nutritious and affordable food. The USDA further categorizes food insecurity into different levels of severity depending on the household's responses to the Core Food Security Module (CFSM) as part of the Current Population Surveys. These categories include high food secure, marginal food security, low food security, and very low food security (Garner, 2016).

High food security households have no problems, or anxiety about, consistently having access to adequate food. Marginally food secure households have some problems at times, or anxiety about, accessing adequate food, but the quality, quantity and variety of their food intake are not substantially

reduced (USDA, 2019). Low food secure households reduce the quality, variety, and desirability of their diets, but the quantity of food intake and normal eating patterns were not substantially disrupted. Households in the lowest category, very low food secure households, have times during the year when their eating patterns of one or more household members were disrupted and food intake reduced because the household lacks money and other resources for food (USDA, 2019). The USDA (2019) describes households within the high or marginal food security categories as food secure and households within the low or very low food security categories as food insecure.

The Prevalence of Food Insecurity

Race/Ethnicity

Food insecurity among racial ethnic groups can vary substantially (Garner, 2016). Food insecurity rates were higher than the national average from 2001 to 2016 which was 12.8%, for Black non-Hispanics at 26.1% and for Hispanic groups at 22.9%. For Hispanics this

can be broken down even further. Hispanics identifying as Mexican had a 20.8% of food insecurity and Hispanics identifying as Puerto Rican had a 25.3% of food insecurity. Food insecurity is also found to be more prevalent among Hispanic adults who are noncitizen at 24.4%, when compared to those who are U.S. citizens at 18.9% (Powers, 2016). For non-Hispanic White households and “other” ethnicities, food insecurity rates were below the national average at 11.4% and 9.4% respectively.

Not only did the Black non-Hispanics, and Hispanic populations have higher rates of low food security than the national average, they also had much higher rates of very low food security throughout the years 2001 to 2014 (Garner, 2016). The 13-year national average in the United States from 2001 to 2014 for very low food security was 4.7%. The rate however for Black non-Hispanic was 8.8%, nearly twice the national average. Hispanics had a very low food security rate of 6.8%, which is well above the national average for that time as well (Garner, 2016). White non-Hispanics on the other hand were below the national average at 3.7%.



Food insecure adults are parents or caretakers who give up their own access to food in order to provide for their children.

Household Compositions/Characteristics and Food Insecurity

Just as race/ethnicity is a factor that plays a role in rates of food insecurity, so is the household composition and characteristics (Garner, 2016). Household types have been found to vary greatly in prevalence of food insecurity (Garner, 2016). Rates of food insecurity were below the national average of 11.8 percent for married-couple families with children at 9.5%. Households with more than one adult and no children living with them had even lower rates of food insecurity at 7.7% (Jensen, Rabbitt, Gregory, & Singh, 2017). Households with elderly persons and even a single elderly person living alone is below the national average of food insecurity at 7.9% and 8.6% respectively. Supported by the data in the previous section, the prevalence of food insecurity was below the national average for households headed by non-Hispanics of other, or multiple races at 9.9% and for White, non-Hispanic households at 8.8% (Powers, 2016).

All households with children, however, were found to be well above the national average of 11.8%, at 15.7% (Jensen et al., 2017). Of those homes, eight percent, had food insecure adults. Food insecure adults are parents or caretakers who give up their own access to food in order to provide for their children (What is food insecurity, 2019). The remaining eight percent of those households, 2.9 million households, are in situations where both the adults and children were food insecure. Households with children under the age of six had an even higher percentage of food insecurity at 16.4% (Garner, 2016). Households with children that were headed by a single woman had a food insecurity rate of 30.3% in 2017 and a rate of 19.7% when

headed by a single man. It was also found that when men live alone, they had a 13.4% rate of food insecurity and women living alone had a 13.9% rate (Jenson et al., 2017). Across the board, women have a higher rate of food insecurity in every household type when compared to men.

Households that are headed by Black non-Hispanics have been found to have a food insecurity rate of 21.8% while households headed by Hispanics have a rate of 18%. Households with annual incomes below the official poverty line, \$24,858 for a family of four in 2017, had a food insecurity rate of 36.8% (Jensen, Rabbitt, Gregory & Singh, 2017). Socioeconomic status is strongly associated with food insecurity (Powers, 2016). In the United States, 39% of African American children and 33% of Hispanic children are living below the official poverty line (Casey, 2019). Those numbers are more than double the 14% poverty rate for non-Latino, White, and Asian children and adolescents.

Rates of food insecurity also can differ across States within the U.S. due to both the characteristics of their populations and to State-level policies and economic conditions (See Figure 1, USDA, 2019). Food insecurity appears to be most prevalent in the southern states where food insecurity rates were reported to be well above the U.S. average at 15.1%. The highest food insecurity rate was found to be in Mississippi at 22%, and the lowest was in North Dakota at 8.4% (Garner, 2016). Within residential classifications, food insecurity was higher than the national average for households in principal cities of metropolitan areas at 13.8% and in nonmetropolitan areas at 13.3%. For

very low food security report having significantly weaker social and emotional support networks (Anderson, Butcher, Hoynes, & Schanzenbach, 2014). Those researchers also found that drug use within families, particularly heroin, is strongly associated with food insecurity among children (Anderson et al., 2014).

It is hypothesized that parents who have a closer relationship with their children possess better information about them, including their food insecurity status (Gundersen & Zilaik, 2014). Mothers in food insecure households have been found to have a more negative perception of their own parenting abilities than do mothers in food-secure households (Powers, 2016).

households were more likely to be food insecure than were children in families with cohabiting partners or with mothers who had partnered with another adult who was not a biological parent (Miller, Nepomnyaschy, Ibarra & Garasky, 2014). While this study did find correlational evidence to suggest that children in single-mother families are at a higher risk for food insecurity, after controlling for socioeconomic status, there was no longer a substantial difference between family types. However, children living with married biological parents still experience a significantly lower rate of food insecurity (Miller et al., 2014).

Research from Gundersen and Zilaik (2014) also indicates that certain populations are

Food insecurity not only leads to poorer health outcomes for children, but also a higher risk of depression and suicidal ideation, chronic conditions, nutrient deficiencies, impaired learning abilities, and causes decreased productivity in school.



Another factor that can lead to food insecurity is the head of household marital status. Balistereri (2018) found that, after controlling for economic and household characteristics, children living with a single parent or living with an unmarried parent in a more complex family, such as a family that includes a cohabiting partner or another adult such as a grandparent, have a greater risk of food insecurity than do children living in families where the parents are married. Another study used four surveys to see whether children growing up in single-parent

particularly vulnerable to food insecurity among children. Balistreri (2018) found that children in immigrant families have higher rates of very low food security in comparison to children in nonimmigrant families. Forty percent of children experiencing food insecurity are made up of children from immigrant families, even though less than a quarter of all children in the United States are children from immigrants (Gundersen & Zilaik, 2014). Similarly, Cook and colleagues (2004) found that children of foreign-born mothers were

three times as likely to experience very low food security as children of U.S. born mothers. Children in households with an incarcerated parent were also found to be another vulnerable group when it comes to food insecurity (Wallace & Cox, 2012).

Effects of Food Insecurity on Children

Without proper education on how to avoid food insecurity for children and their parents, children will continue to suffer. Since millions of children are affected by food insecurity in the U.S. it is something that needs to be addressed. Food insecurity not only leads to poorer health outcomes for children, but also a higher risk of depression and suicidal ideation, chronic conditions, nutrient deficiencies, impaired learning abilities, and causes decreased productivity in school (Ke & Ford-Jones, 2015).

Melchior and colleagues (2012) used data from the longitudinal study of child development in Quebec, which is a representative birth cohort study of children born in the Quebec region from 1997 to 1998. Family food insecurity was ascertained when children were 1½ and 4½ years old. The children's mental health symptoms were then assessed longitudinally using validated measure of behavior at ages 4½, five, six and eight years old. The researchers found the prevalence of food insecurity in this study to be 5.9%. The children from food insecure families were found to be disproportionately likely to experience persistent symptoms of depression, anxiety, and hyperactivity or inattention. The researchers in this study concluded with a high certainty that food insecurity predicts high levels of children's mental health problems, particularly hyperactivity (Melchior et al., 2012).

Another study, using the Canadian National Longitudinal Survey of Children and Youth, found that food insecurity in children was a predictor of depression and suicidal ideation during late adolescence and young adulthood (McIntyre, Williams, Lavorato & Patten, 2013). This was found to be true even after adjusting for potential confounding factors in the study as well. An association between food insecurity and mood disorders was also found by McLaughlin and colleagues (2012). The association between food insecurity and mood disorders in this study was strongest in children living in families with a low household income.

Food insecurity worked indirectly through depression and parenting practices to influence security of attachment and mental proficiency problems in toddlerhood (Zaslow et al., 2009). This same study theorizes that food insecurity early in life can weaken infants' attachments to their parents, which could potentially negatively affect a child's mental health later in life as well. This theory is supported by Melchior's et al., (2012) study as well. Another study that aimed to examine the association between food insecurity and childhood development and behavioral outcomes in the U.S. found that, even at marginal levels, household food insecurity is associated with children's behavioral, academic, and emotional problems from infancy to adolescence (Shankar, Chung & Frank, 2017).

Not only has food insecurity been linked to mental health problems for children, but also physical health issues. In 2012, the American Academy of Pediatrics released a report indicating that children who are exposed to toxic stress, this includes being food insecure, are at a high risk for adverse health outcomes later on in their lives. These health risks include

cardiovascular disease, obstructive pulmonary disease, cancers, asthma, autoimmune diseases, and as already confirmed, depression (Garner & Shonkoff, 2012). Kirkpatrick, McIntyre, & Postestio (2010), using the Canadian national longitudinal survey of children and youth, found that children who experienced hunger or food insecurity, were more likely to have poorer health and that episodes of hunger were also associated with a higher likelihood of chronic conditions of asthma when compared to children who were not food insecure (Kirkpatrick, et al., 2010).

A positive association between food insecurity and childhood obesity has also been reported (Dubois et al., 2011). A study looked at household food insecurity and its correlation with children being overweight in Jamaica and Quebec (Dubois, et al., 2011). In Quebec the prevalence of children being overweight was 26% and in Jamaica it was 11%. The food insecurity rate in Quebec was reported at nine% and 26% in Jamaica respectively. In Quebec, when both boys and girls were analyzed together, the number of overweight children was found to be highest in low socioeconomic families (32%), compared to medium and high socioeconomic families at 23.2% and 22.2%.

The proportion of overweight children in food insecure households was also found to be more than double the proportion in food secure households at a staggering 52.5% compared to 23.1%. Similar results occurred in Jamaica as well (Dubois et al., 2011). Food insecurity was also been linked to food hiding, binge eating, and nighttime eating in children, which ultimately leads to their health declining

and increasing their potential to become obese (Tester, Lang & Laraia, 2016).

Beyond food insecurity hurting children’s mental health and physical health it hurts their academic performance in school. A study performed in Iran, looking at the association between food insecurity and academic performance found that, at the household level, food insecurity was associated with poorer grades in all

subjects studied (Esfandiari, Omidvar, Eini-Zinab, Doustmohammadian, & Amirhamidi, 2017). A significant association between food insecurity and poorer grades was also found at the child level as well. Another study researching the association between food insecurity and academic achievement in Canadian school aged children found similar results (Faught, Williams, Willows, Asbridge & Veugelers,



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2017). Children from low-income households who reported poor diets and food security were less likely to do well in school. Children from these food insecure households had very low odds of meeting expectations for reading and mathematics for their age level (Faught et al., 2017). These academic issues among children in low food insecure houses are traceable back to the behavioral issues associated with food insecurity (Ke & Ford-Jones, 2015).

Resources Available to Help Food Insecure Families

In 1963 President John F. Kennedy proposed expanding and making permanent a small pilot project called the Food Stamp Program. Sixty years later this program is now called the Supplemental Nutrition Assistance Program (SNAP). It remains to be the leading component in the safety net against hunger, assisting one in seven Americans and at a cost of over 80 billion dollars per year (Gundersen & Zilaik, 2014). SNAP benefits are provided to over nine million families with children and can be used to buy food in authorized retail outlets, which number about 250,000 nationwide. The benefits provided by SNAP rise with family size and fall with higher income, and in 2014, the maximum monthly benefit for a family of four was 632 dollars. SNAP benefits may only be used by those who are eligible for them and for families who choose to enter the program (Feeding America, 2019).

Another program that can help food insecure families with children specifically is the National School Lunch Program. This federal assistance program operates in over 100,000 public and nonprofit private schools across

the United States (Gundersen & Zilaik, 2014). In 2013, 31 million students participated in this program, and nearly 19 million of them received free lunches and 3 million of them received reduced price lunches (USDA, 2017). At participating schools, children from families with incomes at or below 130 percent of the poverty level are eligible for free meals. Children living in households whose income is between 130 and 185 percent of the poverty level are eligible for reduced-price meals, which cannot exceed the cost of more than 40 cents (USDA, 2017).

The School Breakfast Program is also a program for children which operates very similar to the National School Lunch Program, but instead of serving free and reduced lunches, it serves free or reduced breakfasts. Almost all schools in the U.S. serve lunches, and about 75% of schools serve breakfasts (Gundersen & Zilaik, 2014). More than 89,000 public, and private schools participate in the School Breakfast Program and in 2013 over 13 million children were part of it.

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) provides food, nutrition education, and health care referrals. Like the other programs, this program is federally funded and operated by the USDA. This program, however, targets a much narrower population which includes, low-income, pregnant, postpartum, and breast-feeding women, as well as infants and children under five years of age (USDA, 2013). WIC vouchers can be redeemed at fewer outlets when compared to SNAP, 46,000 nationwide, and for a much more limited set of foods. In 2013, WIC supported 8.7 million people with an average monthly benefit of 43 dollars (Gundersen & Zilaik, 2014).

With these programs in existence it is easy to think that food insecurity would not be as prevalent as it is in America today but that is not the case. In 2017, an estimated 50 percent of households that received SNAP benefits were still food insecure. Also, 41.7 percent of households that received free or reduced-priced lunches were food insecure and 38.2 percent of those households receiving support from WIC were food insecure as well (Jensen, et al., 2017). The prevalence of very low food security among households participating in SNAP was more than double that of nonparticipating houses in the same low-income range and the same is true for those households who received free or reduced-price school lunches. Based on these data, while these programs are a great assistance to many families in the United States, it is far from a solution to food insecurity for families.

Positive Deviance

Food support programs such as SNAP and WIC have not completely solved the issue of food insecurity within the United States (Jensen, et al., 2017). These programs have acted more like a safety net than as an actual solution to how a family can remain food secure. A safety net is great to have when necessary, but having strategies on how to actually provide food year-round without the aid of an outside resource is the only way to permanently fix a household's food security, change in the household's behavior is necessary., that is where positive deviance comes in (Sosanya et al., 2017).

Positive deviance, in nutrition, is when young children who grow and develop adequately in poor families and communities, where a high number of children are food insecure (Sternin,



Positive deviance is an innovative behavior change approach, that is based upon the premise that populations include individuals who arrive at novel solutions by employing uncommon, beneficial practice, despite having no extra resources or knowledge than the people within their community

Sternin, & Marsh, 1998). These children are considered positive deviant children, and they live in positive deviant families. Positive deviance is an innovative behavior change approach, that is based upon the premise that populations include individuals who arrive at novel solutions by employing uncommon, beneficial practice, despite having no extra resources or knowledge than the people within their community (Sosanya et al., 2017). Positive deviance is a form of social, behavioral and physiological adaptability to nutritional stress in a process that overcomes the adversity that is faced (Schuftan, 1993). Positive deviant behavior is a practice that confers advantage to the people who practice it when compared with the rest of the community (Iorungwa & Terhemba, 2009). It is important within these communities to identify positive deviants because they provide demonstrable evidence that existing solutions to the problem are available within the community (Sparks, 2004).

An example of a positive deviant can be found in an example from the nonprofit organization of Save the Children (Sternin and Choo, 2000). Save the Children has been involved in an intensive effort to help the people of Vietnam reduce childhood malnutrition. They sought to do this by forgoing the traditional development efforts which would usually concentrate on bringing needed resources in from the outside, and instead they looked for a solution to the malnutrition within the affected communities. To do this they sought out very poor families who had managed to avoid malnutrition and food insecurity. By examining these positive deviants within the communities, they found out the local strategies they were using to feed their families. Save the Children found that the mothers in families who were food secure were going out every day to nearby

rice paddies and collecting tiny shrimps and crabs and were adding it to the other food in their children's meals. The researchers also found that these positive deviant mothers would feed their children three or four times a day, rather than twice a day like the other mothers in their communities. The foods that the positive deviant mothers were taking was free and readily available, but the conventional village wisdom held these foods to be inappropriate for young children. This showed the researchers that the solution to food insecurity in these communities did not require a lot of money or other resources to fix it, it simply required the community to change their behavior and start emulating what the positive deviant mothers were doing (Sternin & Choo, 2000).

The most efficient way to improve the food security of communities who generally have poor food security is to use locally available, sustainable, and effective means (Marsh, Schroeder, Dearden, Sternin & Sternin, 2004). Positive deviance has been successfully used to improve the nutritional status of children in several communities since becoming a method of improving food security and can be applied to any aspect of health within a community. Teaching communities strategies and methods to stay food secure independently has a much better long-term outcome when compared to allowing them to rely on outside resources such as SNAP (Marsh et al., 2004).

How Positive Deviance Works

Positive deviance is an asset-based approach with low costs and high return-on-investment. It emphasizes a community's resources in solving its own problems, rather than focusing on what a community does not have or importing strategies or ideas from external

sources. The strategy helps members of the community uncover the positive deviants in their midst and identify successful practices (Marsh et al., 2004). Positive deviance inquiry is a methodological approach that is asset-based, that seeks to identify and optimize existing resources and solutions within the community (Sternin et al., 1998). Through positive deviance inquiry, researchers and their community partners can identify the unique practices of some community members that set them apart from others within the same community, to identify what allows them to cope more successfully.

The positive deviance approach involves partnering with communities to develop case definitions, identify four to six people who have achieved a good outcome despite high risk, interview and observe these people to discover uncommon behaviors or enabling factors, and analyze the findings to confirm that their behaviors are uncommon and accessible to those who need to adopt them. It also includes designing behavior-changing activities to encourage community adoption of these new behaviors. Finally, the positive deviance approach involves monitoring the implementation of these behavior changes

POSITIVE DEVIANCE INQUIRY

1 Define

2 Determine

3 Discover

4 Design

Positive deviance inquiry has four steps. The steps are define, determine, discover, and design. The group involved in creating this positive deviance intervention must first define the problem and describe what success would look like (Iorungwa & Terhemba, 2009). After this, the group must then determine whether there are individuals within the community who have already achieved success. If there are people within the community that have achieved this success, they are the ones that are considered positive deviants. After any positive deviants are found, the group then must discover the uncommon but demonstrably successful behaviors and practices used by the positive deviants to solve their problem. Finally, the group designs an intervention that enables its members to practically apply the successful behaviors of the positive deviants (Sparks, 2004; Marsh, Schroeder, Sternin & Sternin, 2004).

and evaluating whether or not they are making a difference (Berggren, 2004; Sternin et al., 1998; Sparks, 2004). The positive deviance approach takes advantage of the community's already existing assets and strengths, which is what makes it such a powerful intervention. The success of this approach rests on its ability to mobilize the community to identify role models within its midst who use uncommon but successful strategies to tackle common problems, such as food insecurity (Iorungwa & Terhemba, 2009). If the community cannot identify these role models, positive deviants, or have none, this intervention is far less effective. Most international food security initiatives are prescriptive, or donor driven and difficult to sustain without ongoing external resources, which is another reason why the positive deviance approach is so attractive (Marsh et al., 2004).

Implications/Limitations of the Positive Deviance Approach

Positive deviance has many merits, such as being a strong tool that involves the whole community to bypass social norms in changing the dynamics that lead to malnutrition, being a low-cost solution compared to other strategies, and having other indirect benefits in communities such as strengthening social and institutional networks, as well as providing a solid foundation for sustainability of its results (Sosanya et al., 2017). However, the positive deviance strategy does have its limitations. One key component of this strategy is to discover and identify uncommon positive examples in a community. Typically, these can be found at a prevalence of 1-10% in a community. These rare examples can be hard to discover and without them the strategy

does not work. At times these examples can also be costly to identify and common examples of positive deviance fail to stimulate new thinking (Marsh et al., 2004).

The positive deviance approach is also an inappropriate strategy for communities where positive behavior is impossible due to unavailability of relevant services or foods. If there is no possible way for a positive deviant to create ways to avoid food insecurity, then the program cannot work (Marsh et al., 2004). Another limitation with the positive deviance approach is that it assumes that the positive deviants within a community are willing to share what it is that they do to succeed. Some positive deviants might not want to share their secrets out of fear. If the positive deviants share what they do, then maybe they



will lose their ability to continue doing it if everyone else in the community is replicating it (Iorungwa & Terhemba, 2009).

The efficiency of the positive deviance approach has been questioned as well. Given the presumed limited generalizability of findings from local inquiries and the desire to mobilize each community through self-discovery, practitioners of this approach now need to test the assumption that positive deviance is a small-scale approach by evaluating the effectiveness of different intensities of inquiry (Marsh et al., 2004). Also, since the positive deviance approach is viewed by some as a rehabilitative approach, it may be more expensive to perform when compared to other preventative alternatives, such as growth monitoring and promotion, which identify problems while they are easier and less expensive to tackle before food insecurity and malnutrition sets in (Sosanya et al., 2017).

Need for a Positive Deviance Curriculum

Positive deviance has been indicated to produce high success rates in tackling food insecurity and malnutrition (Sosanya et al., 2017). Mulenga (2014) found great success using the positive deviance approach in Zambia. Child malnutrition is widespread in Zambia and is compounded by cultural food perceptions which limit children's access to nutritious foods. In this study a positive deviance inquiry was done to identify local practices that positively impacted child nutritional status. These positive behaviors included child feeding, hygiene, health-seeking, and caring practices. Once the positive practices were identified, they were transferred to families of malnourished children through

experiential learning during 12 days of learning sessions. The weights of the participants involved in this study were measured on days one, 12, 30 and three months after the start of the program, and they were compared to the established positive deviance standards for weight gain. It was found that after 12 days, eight of the nine children in the pilot site of this experiment gained at least 200 grams, the standard for weight gain in a positive deviance program is greater than or equal to 200 grams. After 30 days the standard is 400 grams of weight gain or greater, and all the children in the pilot site had gained 400 grams or more. Three months later, all the children had gained 900 grams of weight, which is more than the standard. Positive deviance approach is a culturally sensitive and effective way to change feeding and childcare practices which leads to children gaining more weight over time (Mulenga, 2014).

Another study performed by the Catholic Relief Services Burundi found similar success to Mulenga (2014). They found that in Burundi, of 1941 children, a positive deviance approach led to 87% of those children gaining greater to or equal to 200 grams in body weight within 12 days and also found that 84% of the children in the study maintained the weight gained at a one-month follow-up weighing. The weight gained using positive deviance programs is maintained and built upon most of the time (Aamoum, Genequand, Crenn, & DeVries, 2012). In fact, a meta-analysis of 24 studies using a positive deviance approach in communities found that all of the studies that used a pre- and post-test design showed that the malnourished children who participated in the program gained weight between the start of the program and its end (Bullen, 2011).

Save the Children used the positive deviance approach to evaluate its effectiveness on childhood malnutrition in Vietnam (Mackintosh, Marsh & Schroeder, 2002). They found a 74% reduction in severe malnutrition among 55 households with children who were younger than 3 years old who participated in their positive deviance program in 1995. Mackintosh and colleagues (2002) then revisited some of the children from the study in 1998, three years after Save the Children had completed their study and the intervention had stopped being taught. These children, and especially their younger siblings born after the completion of the program by Save the Children, had much better nutritional status than children of similar age and sex who did not live in positive deviance intervention communities. The researchers then interviewed the mothers of these children and found that the superior nutritional status of the younger siblings was due to better care from a younger age, which came from improved practices that their mothers had learnt as a result of the positive deviance program (Mackintosh et al., 2002).

To further support the effectiveness of the positive deviance approach, it has been used in Pakistan to identify behaviors associated with good nutritional status in Afghan refugee children, ages six to 24 months (Lapping, Schroeder, Marsh, Albalak, & Zabarkhil, 2002). In the area of study in Pakistan, the community had low levels of formal education and required women to live in strict isolation. The researchers model compared a case control study with the positive deviance approach to identify infant and child feeding behaviors. These researchers were able to identify 12 uncommon feeding, caring, and health-seeking behavior. Not only did the researchers find

that positive deviance approach to be affordable, but they also had high levels of participation in the community. It was found that the positive deviance approach was a valid method of identifying feeding behaviors and other factors related to good nutrition. In their study, many of the children involved gained weight to the standards of the positive deviance approach (Lapping et al., 2002).

Positive Deviance in Education

The Clairton City School District in Pennsylvania launched a positive deviance program that focused on keeping children in school and not in the streets (Niederberger, 2011). The program is focused on seventh, eighth, and ninth graders and was initially meant to address gang violence and street crime, but changed to a school-based program when it became obvious that keeping kids in school was the best way to avoid them joining gangs. After finding out what the positive deviants did, which included putting alarm clocks across the room so that they had to get out of bed to turn them off; groups of students would send out messages to check in on each other and make sure that they were up and ready for school; parents of these successful children were involved and supportive; and the child's school attendance was viewed as non-negotiable by their parents. After implementing the program, it resulted in a 50% decrease of in-school suspension and out-of-school suspensions. It also resulted in a 57% reduction in disruptive behavior in classes, and a 45% drop in late arrivals over a two-year period. Parental involvement in the child's education was also found to have increased significantly over that time (Ayala, 2011).

Another study focused on dropout rates using the positive deviance approach. The study

looked more specifically at students with learning disabilities in the United States (Kallman, 2012). In the U.S., 30% of students with learning disabilities drop out of high school, and Kallman (2012) found that rate to be twice as high as the national average for non-identified students with disabilities. The study identified students with learning disabilities who graduated from high school in five years or less and who had registered with the Center for Accommodations. Kallman's (2012) study focused on the communicative practices exercised by these students. He found that the positive deviants gave themselves consistent self-affirmations and self-validations; received positive praise from their parents, household members, friends, and teachers; and they would receive clear messages from their parents to not use their disability as a crutch. Kallman's (2012) research did not include the implementation of the positive deviance approach that could have been created based off the information gained from the positive deviants. It is clear

however, from other research (Ayala, 2011; Neiderberger, 2011) done in schools that these positive attributes discovered would help other students with learning disabilities to be successful.

Harper (2012) conducted an asset-based study in the U.S. that looked at college graduation rates of African Americans. African Americans represent only four percent of undergraduate men in U.S. universities, and only one-third of them generally make it to graduation (Lederman, 2012). Harper conducted interviews with 219 African American men at U.S. universities who held grade point averages of 3.0 or higher, had consistent records of being involved in student leadership groups and who had received merit-based grants and awards. The key influences on their success were involved parents with high expectations for their academic achievement, influential grade schoolteachers, access to knowledge for scholarships, and same-race peer mentioning by older students. This research did not



[P]arents of... successful children were involved and supportive; and the child's school attendance was viewed as non-negotiable by their parents.

include the creation of a positive deviance program but once these positive deviant traits are identified, they could be used to create a program to help other African American students to be successful at the undergraduate level (Harper, 2012).

Finally, a research study sought to evaluate high school food safety curriculum using a positive deviance model (White, Feng & Bruhn, 2018). The study assessed high school students' food safety knowledge and handling practices and then evaluated the effectiveness of a new food safety curriculum based on the positive deviance approach. The first phase of this study had 114 high school students complete a food safety questionnaire assessing their baseline food safety knowledge. The second phase consisted of 53 different students who participated in the positive deviance curriculum. These students completed five, 15-minute modules: Cook, Clean, Chill, Separate, and Choose food for safety. Prior to administration of the curriculum, the students were given a questionnaire that included the knowledge and attitude questions used in Phase I. Each module of the curriculum included discussion prompts to identify current practices and to facilitate conversations regarding safe food handling behaviors. After each lesson was finished, the students completed the same questionnaire as they did prior to the curriculum to evaluate what they had learned. The questionnaires from the students in phase I and from the student's pre-questionnaire answers in phase II showed that there was an overall lack of knowledge of proper food handling practice and procedure in high school students. After the positive deviance curriculum was implemented with phase II however, every topic within the questionnaire saw an overall increase in

correct responses. Administration of this engaging positive deviance curriculum increased knowledge and equipped students with the tools to help safely prepare food for themselves (White, et al., 2018).

With the research pointing to positive deviance being an effective method of teaching in communities and schools it is very important that this method be used to help create curriculum focused solely on nutrition (White, et al., 2018; Lederman, 2012; Ayala, 2011; Niederberger, 2011). Curriculum on nutrition using the positive deviance approach is rare which is why it is so important that more be created to help students avoid food insecurity. Food insecurity results in more than just children experiencing hunger, but it has many immediate and lifelong effects for those children.

Food insecurity is a problem that currently should be solved, especially in developed countries like the United States. That is why it is so absurd that even as recently as 2014, it was found that 14 percent of households in the U.S. were food insecure at some point during the year (Garner, 2016). While SNAP's service is great, it does not solve the root of the problem, it merrily masks the symptoms of being food insecure by providing its recipients with free food. The positive deviance approach is designed to address this problem and is something that is needed for more children and adults alike. It would help food insecure houses learn the strategies that are applicable to them in order to become more self-sustaining households who are no longer food insecure. With proper positive deviance implementation into children's curricula when they are young, may result in a decrease in food insecurity in the U.S. for the future (Berggren, 2004).

PURPOSE

The purpose behind creating a nutrition curriculum for local Ogden City Schools which are part of the Ogden Civic Action Network (OgdenCAN), is to combat food insecurity in relation to intergenerational poverty. Data supports the fact that food insecurity will never be eradicated, but through a positive deviance model, there is a greater chance of improving a family's awareness of resources that are available to them in their community. A positive deviance model is essentially the first step towards combatting intergenerational poverty in the greater Salt Lake Valley, specifically in Ogden, Utah.



[F]ood insecurity will never be eradicated, but through a positive deviance model, there is a greater chance of improving a family's awareness of resources that are available to them in their community.



METHOD



This curriculum is to reach the students first, who will then take it upon themselves to inform family members and implement what they will learn to aid themselves.

The vision behind OgdenCAN aims to improve the health, strength, and engagement within our community: economically, socially, environmentally, educationally and civically (<https://www.weber.edu/ogdencan>). This curriculum has been designed to be implemented in 13 elementary schools in Ogden School District. Within the Ogden School district, 38.48% of its population are People of Color (POC), and 62% of the entire population in Ogden is low income (Social Determinate, 2019). While the intentions are to apply this at the elementary level, information provided can be upscaled for higher grade levels such as middle and high school. The elementary schools that this program will potentially be implemented, 100% of students receive free breakfast as well as free or reduced lunch. Many of these students have received little or no nutrition education. Over time, the term “positive

deviance” has become increasingly popular which has resulted in multiple definitions and applications (Herington & van de Fliert, 2018). Traditionally, a positive deviance approach aims to reach the parents or guardians with hopes of essentially combating food insecurity. This curriculum is to reach the students first, who will then take it upon themselves to inform family members and implement what they will learn to aid themselves.

EXPERT EVALUATORS

This curriculum project will utilize two expert evaluators. This curriculum was not created by a certified nutrition professional, therefore it is important to foster a relationship with individuals who are qualified in the discipline of nutrition. Both expert evaluators granted permission to use potential identifying information in this paper which can be found in Appendix C. One is a master level teacher who has been teaching nutrition for fifteen years. For the last seven years they have taught as a faculty member in the College of Health Professions at Weber State University, and is also a Health Educator for the Weber-Morgan Health Department for seven years. The second expert evaluator is also a master level teacher. They have been a nutrition educator for the past nine years, and are a faculty member in the Department of Exercise and Nutrition Sciences at Weber State University. Both experts evaluated the quality of the content of the curriculum and approved of the curriculum that was created. This validation and approval are monumental in continuing to build community partnerships between OgdenCAN and Ogden School District. Suggestions

included minor grammar changes, as well as addressing who would implement the nutrition curriculum. All changes were addressed by the curriculum creator.

SCOPE OF CURRICULUM

The curriculum that we designed is a comprehensive nutrition program that aims to increase nutrition education and combat food insecurity amongst elementary students. This curriculum is not designed to eradicate food insecurity, but rather to educate and influence students to make healthy food choices. When students meet, they will participate in activities such as general nutrition education, recipe education and implementation, as well as visiting local community resources that can aid them, and their families, to healthy food and meal choices or options. Additionally, students will learn about social movements such as farm to fork, which encompasses the process that their food takes from farm through all of the necessary steps to reach their table.

[S]tudents will learn about... the process that their food takes from farm through all of the necessary steps to reach their table.

This curriculum has been designed for seventy-two individual lessons. This would account for two meetings per week for thirty-six weeks. Students will meet for about two hours after school each day that the program is offered while their parents or guardians are still at work, amounting to four

hours of teacher-student contact each week. The curriculum is designed for Ogden School District located in Ogden, Utah, but is versatile and can be manipulated to fit the population at hand. Teachers at the local schools will be responsible for implementing this curriculum at their respective schools. Additionally, a faculty member of the Annie Taylor Dee School of Nursing at Weber State University in Ogden, Utah, reached out to the curriculum creators to disburse this in other school districts throughout the state of Utah.

CONTEXT

Students who attend an after-school program will partake in a nine-month program where they will meet two times per week, and learn topics such as general nutrition, healthy recipe creation, and where our food comes from. The curriculum is designed to fulfill health education standards in the state of Utah, including literacy, English Language Arts (ELA) and mathematic standards. Mathematics will be incorporated by observing students measuring foods and determining proper portion sizes when creating their meals. Additionally, to achieve ELA comprehension, students will be given a notebook when they join the afterschool program. This notebook is to be used as a food journal or diary, and gives them an opportunity to engrain what they have learned, but also pose questions that they may have throughout the curriculum. At the end of each meeting, or lesson, there is an evaluation for the facilitator. While students will not necessarily benefit directly from the evaluation, this will help the facilitator determine what material is being absorbed and implemented, as well as what the facilitator may need to revisit or clarify.

DISCUSSION

The creation of this curriculum has proven to be highly rewarding. Like many, we have seen several commercials on television related to poor individuals and families with the inability to receive clean drinking water, let alone eat a proper diet. Because of this, we wanted to create a program that was essentially plug and play. We researched many books, nutrition programs, and sources that already existed, hoping that there was something out there to combat food insecurity and its relation to intergenerational poverty. While there is a plethora of resources within our community in Ogden, Utah for families who are struggling to put food on their tables, there simply is not a program to teach individuals how to consume healthy food in their current situation.

We started with extensive research. We wanted to understand how other areas of the United States, and world at whole, handled food insecurity. We quickly learned that this is not a geographical issue, it is not a racial issue, and it most definitely is not a rich-poor issue. Food insecurity is capable of affecting you, a family or friend, and your neighbor next door. People simply fall on hard times, and unfortunately do not know where to turn for help. This allowed us to take a step back and reformat how a positive deviance approach should be utilized. We decided to hit the front lines first, and go straight to the source to combat intergenerational poverty; teaching the children.

To start, we wanted to understand our population at greater lengths. As you can imagine, working with elementary-aged students can get difficult, so we took Weber

County statistics into consideration to make the most accurate and educated decisions possible. It was brought to our attention that this would only be implemented at the three lowest socioeconomic status schools in Ogden School District (OSD), but after sharing our program with OSD they made a notion to try and get this after school program into all of their elementary schools. This was a huge win for both of us! One of the concerns that we had during the creation of this curriculum was as to if and how it would be implemented.

After meeting with OgdenCAN we set aside our worries and began to create a curriculum that would benefit the local community. First and foremost, we had to adhere by Utah Education Standards for nutrition and health, English language arts (ELA), and mathematics. Currently, the standard for nutrition education is MyPlate. We created approximately nine months of educational material, with the exception of holidays and breaks, around the structure and discipline of MyPlate. The students begin by learning what MyPlate is and why, when possible, they should try to structure their meals in that specific way. We then provide specific details related to nutrition, such as carbohydrates, protein, fat and oil, as well as liquid. We also suggested teaching students about food handling and food safety, as well as movements such as Farm to Fork which teaches students the process that their takes from the farm until it gets to their table. Lastly, we wrap up the curriculum by allowing students to share what they have learned over the past eight months by creating and cooking meals for their friends, family, and guardians.

DISCUSSION

One of the issues that we ran into when creating the curriculum was making the information fun and interactive. As we were writing the curriculum, we decided to put ourselves in the students' shoes. Keeping in mind the students were in an after-school program, and had spent the day in school we wanted to develop a curriculum that began each meeting with a fifteen to twenty-minute lecture activity, followed by the rest of the meeting using hands-on and engaging activities. Some of these include journal writing to meet ELA standards, measurement to meet mathematics standards, and worksheets or group work which revolve around nutrition.

As we reflect on our project as a whole, we are beyond thankful to have created a program that could have a tremendous impact on our local community. While it was hard work, this is a piece of work that can be manipulated to benefit an array of different community settings. Although our curriculum has been created to reach the students first, we realize that this can also be taught to adults. We hope that those who participate in this program are positively influenced to lend their hand in minimizing food insecurity in relation to intergenerational poverty.



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APPENDICES

APPENDIX A: IRB REVIEW



WEBER STATE UNIVERSITY
Institutional Review Board

March 25, 2020

Dear Nathan Dunivan and Justin Herbert,

I have reviewed the Purpose and Methods section of your project entitled "A Positive Deviance Approach to An After School Nutrition Curriculum for Elementary Students" and based on the content, no IRB review is necessary.

You may proceed with your project at this time. Dr. Natalie Williams is the chair of the committee and will oversee this project.

Please remember that any anticipated changes to the project and approved procedures must be submitted to the IRB prior to implementation. Any unanticipated problems that arise during any stage of the project require a written report to the IRB and possible suspension of the project.

A final copy of your application will remain on file with the IRB records. If you need further assistance or have any questions, e-mail me at sherylrushton@weber.edu

Sincerely,

A handwritten signature in cursive script that reads "Sheryl J. Rushton".

Sheryl J. Rushton, Ph.D.

Institutional Review Board,

Education Subcommittee Member

APPENDIX B: CURRICULUM PROJECT

The inspiration behind this curriculum is to combat intergenerational food insecurity, and educate students on general nutrition that will help them as they grow older and become more aware of their surroundings and choices. In Ogden, Utah, there is very little formal nutrition education for elementary-aged students. Because of this, limitations include unfamiliarity with certain foods, access to resources for food, and proper implementation for the curriculum itself. For this reason, the curriculum creator suggests that the curriculum be implemented by an individual well-versed in nutrition, or a related field. Utah health education standards have been provided for grades 1, 3, and 5. The students who partake in this after school program will range from first to fifth grade, and there will be a rise in comprehension throughout the program appropriate to those grade levels.

In addition to meeting the health education standards set forth, we also want to incorporate mathematics and reading/writing comprehension. To fulfill ELA comprehension, my suggestion is to provide students with a food journal, or diary. Their take-home work after each meeting is to write down what they have learned – Minimum will be one paragraph (3-5 sentences) that answers what they have learned, how they will apply this information, and to ask any questions that they may have. A standard notebook will suffice. There will also be multiple fiction, and non-fiction, readings that students will take part in during class as well as take-home activities as the facilitator finds necessary. Additionally, mathematic comprehension will be incorporated through the creation of recipes and measuring ingredients properly.

This is what has been considered the bare bones of a curriculum. It has been created to give the facilitator an outline of what is to be taught with current nutrition standards. A sample lesson plan has been provided for each monthly theme, or objective.

Utah Health Education Standards, Nutrition

1st grade, Strand 5

Standard 1.N.1:

Recognize major food groups, including water, and list a variety of healthy foods in each group.

Standard 1.N.2:

Identify foods and beverages that are healthy choices for the body and explain the importance of choosing healthy foods at each meal.

Standard 1.N.3:

Describe how food is fuel for the body.

Standard 1.N.4:

Recognize not all food products advertised or sold are healthy.



3rd grade, Strand 5**Standard 3.N.1:**

Demonstrate healthy behaviors to maintain or improve personal nutrition, fitness, and oral health including encouraging healthy food behavior and physical activity.

Standard 3.N.2:

Identify healthy foods, including snacks, in appropriate portion sizes.

Standard 3.N.3:

Describe the benefits of eating a nutritious breakfast.

Standard 3.N.4:

Discuss how family, peers, culture, and media influence eating habits.

5th grade, Strand 5**Standard 5.N.1:**

Use a food label to calculate how caloric intake can change depending on the number of servings consumed.

Standard 5.N.2:

Create a healthy meal, including beverage, using current dietary guidelines.

Standard 5.N.5:

Analyze the influence of media and technology, including social media, on personal and family nutrition and body image.

Standard 5.N.6:

Explain why different foods are produced in various regions of the United States and how this may affect consumer practices and local diets.

Utah English Language Arts Standards, Writing Standards**1st grade, Writing Standard 1**

Write opinion pieces in which they introduce the topic or name the book they are writing about, state an opinion, supply a reason for the opinion, and provide some sense of closure.

1st grade, Writing Standard 2

Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.

Utah English Language Arts Standards, Literature Standards**1st grade, Literature Standard 1**

Ask and answer questions about key details in a text.

Utah English Language Arts Standards, Writing Standards**3rd grade, Writing Standard 2**

Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

Utah English Language Arts Standards, Literature Standards**3rd grade, Literature Standard 1**

Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

Utah English Language Arts Standards, Literature Standards

5th grade, Literature Standard 1

Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.

Utah English Language Arts Standards, Writing Standards

5th grade, Writing Standard 1

Write opinion pieces on topics or texts, supporting a point of view with reasons and information.

Utah Mathematics Standards

3rd grade, Strand: Number and Operations – Fractions (3.NF)

Develop understanding of fractions as numbers. Denominators are limited to 2, 3, 4, 6, and 8.

5th grade, Strand: Number and Operations – Fractions (5.NF)

Standard 5.NF.2: Solve real-world problems involving addition and subtraction of fractions referring to the same whole, including unlike denominators.

Theme 1: MyPlate

- i. What is MyPlate
- ii. Sections of MyPlate – Grains and carbohydrates i.e. fruits and vegetables
- iii. Sections of MyPlate – Protein and dairy
- iv. Build healthy meals

Theme Objectives:

1. Students will develop an understanding of the different areas of MyPlate.
2. Students will design healthy meals based on MyPlate.
3. Students will begin to identify healthy food options for the different areas of MyPlate.

Sub-Theme Objectives:

Week 1: Students will grasp the objectives behind the MyPlate model.

Week 2: Students will define where, and how much, grains/carbohydrates, as well as fruits and vegetables, are suggested per meal for their plates.

Week 3: Students will define where, and how much, protein and dairy are suggested per meal for their plates.

Week 4: Students will demonstrate their knowledge by building MyPlate approved meals.

Sample Lesson Plan – Week 1, Day 1

Objective: Students will grasp the goals behind the MyPlate model.

References/Worksheets: https://fns-prod.azureedge.net/sites/default/files/tn/dmp_student2-1.pdf
MyPlate placemat

Materials: Markers, crayons, colored pencils, MyPlate Placemat worksheet

Procedure:

Time	Teacher Activity	Materials
3:00–3:15 pm	Ice breaker	Teacher discretion
3:15–3:35 pm	Introduction to MyPlate principles. What is MyPlate? Why do we use MyPlate? Brief intro. to what the different disciplines of MyPlate are. Explain to students that carbohydrates & proteins contain 4 kilocalories per gram, and fat contains 9 kilocalories per gram.	MyPlate Placemat worksheet
3:35–4:00 pm	Visit each individual area of a MyPlate plate. Give specific food examples for each that are culturally appropriate to the audience. As you teach each section, instruct students to color in that section with their favorite foods that apply.	MyPlate Placemat worksheet, markers, colored pencils, or crayons
4:00–4:10 pm	Student/Teacher break	
4:10–4:40 pm	Count students off 1 to 3, 1 to 4, or 1 to 5 depending on group size. Instruct students to then write out one sentence that describes their favorite food from each section of MyPlate. Observe sentences and conversation to make sure they are appropriate.	MyPlate Placemat worksheet, markers, colored pencils, or crayons
4:40–5:00 pm	Wrap up. Test student comprehension of lesson by asking appropriate questions related to MyPlate. Ask them to share one or two sentences that they completed while in their group activity.	White board, dry-erase marker(s)

Utilize the MyPlate website for activities to utilize during the second meeting of the week. An example includes ants on a log i.e. celery, peanut butter, and raisins in conjunction with fruit and vegetable sorting worksheet. When making the ants on a log, explain portion size and hold students accountable while they make them (this will suffice for the math comprehension).

Food Sorting Worksheets:

<https://www.fns.usda.gov/tn/discover-myplate-student-workbooks> (all worksheets)

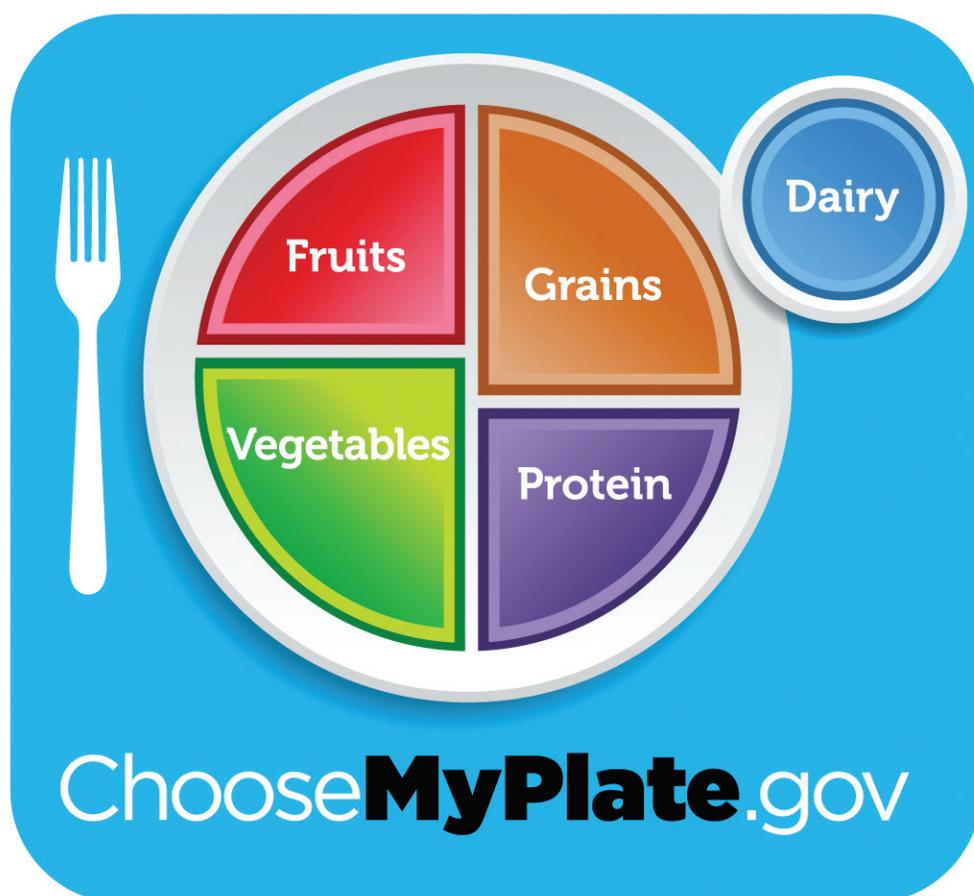
https://fns-prod.azureedge.net/sites/default/files/tn/dmp_student1-1.pdf (fruits & veggies)

https://fns-prod.azureedge.net/sites/default/files/tn/dmp_student1-3.pdf (protein)

Evaluation:

Students will primarily be evaluated during the group activity by making sure that their sentences are legible, appropriate, and make sense related to the different areas of MyPlate.

An evaluation for the second meeting will be completed by observing students to make sure that their serving sizes are correct. Additionally, teach them to add up the calories of one serving. The point of how many calories is not the point, rather, that they are competent in understanding that food = calories and being conscious of how much they are eating is important.



Theme 2: Grains and Carbohydrates

- i. What is a grain? What is the purpose within our body?
- ii. Bread and rice
- iii. Beans and legumes
- iv. Fruits and vegetables

Theme Objectives:

1. Students will understand different major carbohydrate sources.
2. Students will differentiate different starch sources, including rice and grains, beans and legumes, and bread.
3. Students will identify different fruits and vegetables.

Sub-Theme Objectives:

Week 5: Students will define what a carbohydrate is and how many calories are in one gram.

Week 6: Students will determine what grains derive from starch sources.

Week 7: Students will grasp the differences amongst popular beans and legumes.

Week 8: Students will demonstrate their knowledge about culturally appropriate fruits and vegetables.

Sample Lesson Plan – Week 8, Day 1

Objective: Students will demonstrate their knowledge about culturally appropriate fruits and vegetables.

References/Worksheets:

https://fns-prod.azureedge.net/sites/default/files/tn/dmp_student1-1.pdf (Fruit and Vegetable Sorting worksheet)

https://fns-prod.azureedge.net/sites/default/files/tn/dmp_student1-2.pdf (Grains and Dairy Sorting worksheet)

Materials: Markers, crayons, colored pencils, Fruit and Vegetable Sorting worksheet, Grains and Dairy Sorting worksheet, fresh produce i.e. mango, apple, pear, lettuce, tomato, and tomatillo, white bread, wheat or multigrain bread, pinto beans, black beans, lentils

Procedure:

Time	Teacher Activity	Materials
3:00–3:15 pm	Ice breaker	Teacher discretion
3:15–3:30 pm	Distribute Grain and Dairy Sorting worksheet. Put more emphasis on the grain section, as dairy will be discussed in depth at a later date. Instruct students to color the grain basket one color, and the dairy basket a different color. Then, ask them to distribute the foods appropriately.	Grain and Dairy Sorting worksheet, markers, colored pencils, or crayons, scissors, glue sticks
3:30–3:40 pm	Go over Grain and Dairy Sorting worksheet. Make corrections where applicable. If possible, use breads, legumes and beans, as physical and tangible examples for this.	Grain and Dairy Sorting worksheet, markers, colored pencils, or crayons, scissors, glue sticks
3:40–4:00 pm	Introduction to grains, specifically bread. Show white and multigrain bread. Discuss how carbohydrates are 4 kilocalories per 1 gram. Cut up both breads, into fours, and distribute samples to each student. Ask them which bread they prefer, and why. Allow discussion!	Plastic knife, napkins, plate, white bread loaf, and multigrain bread loaf
4:00–4:10 pm	Student/Teacher break	
4:10–4:25 pm	Distribute Fruit and Vegetable Sorting worksheet. Just like the Grain and Dairy Sorting worksheet, instruct students to color the baskets different colors and distribute fruits and vegetables appropriately.	Fruit and Vegetable Sorting worksheet, markers, colored pencils, or crayons, scissors, glue sticks
4:25–4:35 pm	Go over Fruit and Vegetable Sorting worksheet. Make corrections where applicable. If possible, use fresh produce as physical and tangible examples.	Grain and Dairy Sorting worksheet, markers, colored pencils, or crayons, scissors, glue sticks

4:35–4:55 pm	<p>Introduction to fruits and vegetables.</p> <p>Distribute samples of each fresh produce for students to munch on while you teach them the applicable information.</p> <p>Discuss which they prefer over others, and why.</p> <p>What did they taste? Why do they like the fruits (generally) more than the vegetables? Which of these do they often eat? Did they try anything new?</p>	Teacher discretion
4:55–5:00 pm	<p>Wrap up.</p> <p>Ask if students need any clarification, and answer any appropriate questions that may arise.</p>	

Evaluation:

Evaluation is similar to other weeks. Observe and make sure that students are putting the foods in the correct areas. During discussions, make sure that students are portraying their thoughts properly and make corrections with their communication skills as necessary. Also pose a question “How many calories are in 1 gram of carbohydrates? You can choose to weigh out specific foods, bread more than likely, to “guesstimate” the number of calories in one serving of said food. This will ensure mathematic comprehension.



Theme 3: Protein

- i. What is protein? What is the purpose within our body?
- ii. Animal proteins
- iii. Non-Animal proteins
- iv. Dairy

Theme Objectives:

1. Students will recognize the importance that protein plays in their bodies.
2. Students will categorize sources that are animal protein and non-animal protein.
3. Students will classify the different sources that protein can come from.

Sub-Theme Objectives:

Week 9: Students will define what protein is and what sources it can come from.

Week 10: Students will recognize the different animal proteins.

Week 11: Students will classify non-animal proteins.

Week 12: Students will examine dairy and the benefits of it throughout our body.

Sample Lesson Plan – Week 16, Day 2

Objective: Students will examine dairy, where it comes from, and how it is processed.

References/Worksheets:

<https://www.youtube.com/watch?v=EOAavg4ftFk>

Jenna, A Dairy Farmer

<http://www.agintheclassroom.org/TeacherResources/AgMags/Dairy%20Ag%20Mag%20for%20SmartBoard.pdf>

Illinois AgMag, Dairy

https://naitc-api.usu.edu/media/uploads/2016/02/03/Dairy_Farm_Fact_Sheet.pdf

Dairy Farm Fact Sheet

Materials: Worksheets and links listed above, markers, crayons, colored pencils, scissors.

Procedure:

Time	Teacher Activity	Materials
3:00–3:30 pm	<p>Show the video “Jenna, A Dairy Farmer” At the completion of the video, ask the following questions:</p> <p>What tools or technologies did you notice that are necessary for the production of milk?</p> <p>What is different about how farmers produced milk and cheese in the past?</p> <p>Does milk come directly from the store?</p> <p>How has technology made it easier for us to buy so many different kinds of food products from the store?</p>	Screen, projector, computer with proper cables, “Jenna, A Dairy Farmer” video
3:30–3:45 pm	<p>Take a quick picture walk with the students using the Illinois Dairy Ag Mag.</p> <p>Ask questions such as: What will we be learning about? Where do you think dairy cows are milked? How does milk get from the farm to the grocery store?</p>	Illinois Dairy Ag Mag printouts
3:45–4:00 pm	Instruct the students to state facts regarding the dairy cows from the Dairy Farm Fact Sheet. Have the Ag Mag handy in case they want to review a page.	Dairy Farm Fact Sheet, Illinois Dairy Ag Mag
4:00–4:10 pm	Student/Teacher break	
4:10–4:30 pm	Place students into groups of 3 to 4. Have them share with their group what they learned from the Dairy Farm Fact Sheet. Have students exchange fact sheets to see what each other has learned.	Dairy Farm Fact Sheet
4:30–4:50 pm	Take a survey and ask the students which dairy product they enjoy the most; butter, cheese, ice cream, yogurt, etc. Once votes are tallied show the video of the dairy product that received the most votes found in the Illinois Dairy Ag Mag on page 2 under the heading, “Utterly Cool.” Click on the video camera icon and the video will begin to play.	Screen, projector, computer with proper cables, Illinois Dairy Ag Mag, whiteboard, dry-erase markers
4:50–5:00 pm	Wrap up. Ask if students need any clarification, and answer any appropriate questions that may arise.	

Evaluation:

To evaluate, see 4:30-4:50 activity above. Essentially, students should be able to respond and answer these questions if the information was comprehended. Learning about where our food comes from is almost as, if not more important, than learning about the food itself.

As before, continue to check food journals/diaries to make sure that students are keeping up to date. I feel that this step is extremely valuable in student's comprehension, but also retention of the information that they have learned. It is likely that parents will review this information, OR students will feel inclined to share what they have learned with their family members.

Theme 4: Fats, Oils & Sweets

- i. What is fat and why do we need it?
- ii. Is oil really that bad for you?
- iii. Sweets... How much is too much?
- iv. You're nuts! (& seeds)

Theme Objectives:

4. Students will understand oil and its difference from solids and liquids.
5. Students will learn about portion control – Specifically with sweets and treats.
6. Students will examine different nuts and seeds.

Sub-Theme Objectives:

Week 13: Students will recognize the role that fat plays within our diet.

Week 14: Students will differentiate different types of oil that may be common in their diet.

Week 15: Students will learn about portion control and moderation when it comes to desserts and sweets.

Week 16: Students will categorize different nuts and nut butters.

Sample Lesson Plan – Week 20, Day 1

Objective: Students will categorize different nuts and nut butters.

References/Worksheets: N/A

Materials: Pinto beans, bowls, paper plates, butter knives, warm water, magnifying glasses, paper, markers, crayons, colored pencils.

Procedure:

Time	Teacher Activity
3:00–3:15 pm	Ice breaker activity of your choice
<p>PART 1: No time frame, just follow steps and allot time necessary.</p> <p>Step 1: Distribute a dry pinto bean, a paper plate, and a magnifying glass to each student. Remind them not to put the bean in their nose, ears, or mouth! Ask students what they think it is. Some will say a bean; others may say it is a seed. Tell them that it is a bean, which is a kind of seed. Ask students: What is the job of a seed?</p> <p>Step 2: Tell students that today we will discover the job of a seed. We will dissect, or open up, the seeds and look inside. Ask students to open their seeds (without using their teeth) and describe what they see inside.</p> <p>Step 3: After a few minutes, ask if anyone has opened their seed. Probably no one has been able to. Ask students what they wear when it is cold outside (a coat). Tell students that a seed has a coat covering it until it is ready to grow. Right now, it is asleep, waiting to wake up. It may sleep for a week, a month or even a year until it has the right amount of water and warmth. The seed will need water and the soil must be warm enough for it to grow.</p> <p>Step 4: Distribute the soaked pinto beans to each student. Ask them to compare them to the dry one. Inform students that these pinto beans have been soaked in warm water to imitate the warm soil. Invite students to try to open these seeds and observe what is inside using their magnifying glasses. Most will see a new plant growing. If they do not find one, give them another bean.</p>	
Break	
<p>PART 2: No time frame, just follow steps and allot time necessary.</p> <p>Step 1: Gather students together and ask what they saw inside the seed. Ask one student to draw what they observed on chart paper. Label the parts of the seed for with lines extending from the three parts: seed coat (the outer area), food (inside the bean), and the new plant.</p> <p>Step 2: Invite students to draw a picture of the inside of their seed, label its parts and paint them.</p> <p>Step 3: Gather students back together and ask them to tell about the new plant they saw in their seed. Ask students what they think the new plant will do (grow). Ask students: Then what is the job of a seed? (To grow into a plant).</p>	
<p>*This lesson can be drawn out over multiple days so that students get a better idea of seeds and “how they work”. Feel free to adjust objectives and themes appropriately, but here is “Day 1”.</p>	

Evaluation:

This specific lesson does not necessarily have a mathematical application, but if you would like to create something please feel free to do so. This lesson will play a large role in their journals/diaries, so following up on questions or concerns that may arise through that medium will be important.

Theme 5: Liquid

- i. Water is essential, essential, essential!
- ii. Fruit juices
- iii. Milk – How do I know which type to buy?
- iv. Smoothies Mm mm Yum!

Theme Objectives:

7. Students will assess the importance of adequate water consumption.
8. Students will identify dairy sources, specifically milk, and its importance in the human diet.
9. Students will develop healthy smoothie recipes.

Sub-Theme Objectives:

Week 17: Students will understand why adequate water consumption is essential to functioning optimally.

Week 18: Students will interpret which fruit juices are deemed healthy versus not healthy.

Week 19: Students will recall knowledge about milk and where it comes from.

Week 20: Students will test different smoothie recipes.

Sample Lesson Plan – Week 24, Day 2

Objective: Students will develop healthy smoothie recipes – Packed with vitamins, minerals, and energy!

References/Worksheets: N/A

Materials: blender(s), cups, Greek yogurt (vanilla), pineapple juice, pineapple, mango, banana, ginger, orange juice, avocado, spinach, kiwi, milk, strawberries, watermelon, raspberries.



Procedure:**Teacher Activity**

Today will be spent making smoothies! While there is no time constraints on today, please be aware as to not run out of time before all students get their smoothie(s). A math component will be applied to this lesson by making sure that students understand proper ratios and measurements.

Recipes: Each recipe yields 4 servings, please allow students to try all of these options.

Yellow Smoothie

½ cup pineapple juice

½ cup Greek yogurt

½ cup frozen pineapple, diced

½ cup frozen mango

1 banana, chopped

1 tsp grated ginger

Green Smoothie

½ cup orange juice

½ vanilla Greek yogurt

½ avocado, peeled

2 kiwis, peeled

1 handful of baby spinach

Red Smoothie

¼ cup milk

½ cup Greek yogurt

½ cup frozen raspberries

½ cup frozen strawberries

½ cup frozen watermelon

Use **frozen fruit** as to not water down the smoothie mixture! Take different student volunteers to help prepare the different smoothies.

Evaluation:

Students will be evaluated by ensuring that adequate amounts of ingredients are added to the recipes for each smoothie. Allow them to adjust amounts as to serve enough for the entire class. Ask questions that they should be able to recall answers from previous lessons about fruits, vegetables, and fats. This is meant to be a fun lesson!



Theme 6: Food Safety

- i. A clean and sanitized cooking station
- ii. Cross contamination
- iii. Food temperatures
- iv. Shelf life

Theme Objectives:

- 10. Students will understand the importance of proper food safety.
- 11. Students will determine the appropriate “shelf life” for fresh produce.
- 12. Students will assess the negative consequences of cross-contamination.

Sub-Theme Objectives:

Week 21: Students will apply their knowledge to create a clean, and sanitized, cooking/food preparation station.

Week 22: Students will assess instances of cross-contamination.

Week 23: Students will learn to store food at proper temperatures to maximize freshness and shelf life.

Week 24: Students will differentiate “use by”, “sell by”, and “best if used by” dates.



Sample Lesson Plan – Week 26, Day 1

Objective: Students will assess instances of cross-contamination.

References/Worksheets: N/A

Materials: celery, carrots, broccoli, cauliflower, eggs, some sort of raw meat, produce brush, cinnamon, olive oil, dawn dish soap, plastic bags or Tupperware to separate food.

Procedure:**Teacher Activity**

We will break today's activities down into two activities: Clean and Separate. There is no time allotment for each of these activities, but aim for about 50 minutes for clean and 50 minutes for separate.

Clean:

1. Washing hands and surfaces often is important because foodborne bacteria can spread throughout the kitchen, getting onto cutting boards, utensils, sponges, countertops and food. If eaten, harmful bacteria can cause foodborne illness.
2. All fruits and vegetables need to be washed before eating them, even if the vegetable or fruit will be peeled. Contaminated skin easily can contaminate the edible portion of the fruit or vegetable.
3. Celery, carrots, broccoli and cauliflower should be washed with running water. Potatoes and other firm skinned vegetables, especially root vegetables, should be washed with a produce brush. (Demonstrate washing a carrot or potato with a produce brush. Hand out produce brushes.)
4. Wash freshly picked garden vegetables and tree fruits before eating them. Such produce may have been contaminated by birds, animals and insects.
5. Do not use soap or detergent to wash fruits or vegetables.
6. Discuss the importance of washing the tops of cans before opening. (Demonstrate with canned olives if desired.)

Activity:

1. Give each participant about a teaspoon of oil to rub in his or her hands.
2. Sprinkle hands with cinnamon.
3. Ask participants to wash their hands with no soap and see how clean they get.
4. Next, ask participants to wash their hands with warm water and soap for 20 seconds and see how clean they get.
5. When is washing your hands important? (Examples: Before you begin cooking, after touching raw meat, after using the restroom, after changing diapers, after touching a pet.)

Break

Separate:

1. Keeping potentially hazardous food, such as raw meat, fish and raw eggs, separate from foods that will not be cooked is another important way to keep foodborne bacteria from spreading.
2. Wash cutting boards, dishes and countertops with hot, soapy water after preparing each food item and before going on to the next item.
3. Meat and juices from meat can spread bacteria through cross-contamination: for example, handling raw meat and then handling vegetables without washing hands.

Some tips to avoid cross-contamination...

1. Wrap meat in plastic bags provided in the meat section of the grocery store.
2. If using reusable bags, have separate bags for meat and produce.
3. Store raw meat away from ready-to-eat items.
4. Place raw meat and eggs in the bottom of the grocery cart.
5. Store raw meat and eggs on the bottom shelf of your refrigerator.
6. Use a separate cutting board for produce and raw meat if possible. (Hand out flexible cutting boards if applicable.)
7. Never use the same plate for raw and ready-to-eat food unless it is washed in between.

Evaluation:

Evaluation for this activity will be determined by whether or not students follow instructions; Especially when they are instructed to wash their hands, brushes, and separate food appropriately. This is more of a “serious” lesson, but there is also room to make it fun! I suggest inserting your own ideas to spice things up, and make it a little more light-hearted.



Theme 7: Building a Healthy Meal

- i. Grains and carbohydrates
- ii. Produce – fruits and vegetables
- iii. Protein – animal meat and dairy
- iv. Grocery store field trip

Theme Objectives:

- 13. Students will implement what they have learned over the past few months to create healthy meals based on MyPlate standards.
- 14. Students will determine what carbohydrates, protein, and dairy are essential for a healthy meal.
- 15. Students will understand the different sections of a grocery store, and why foods are located where they are.

Sub-Theme Objectives:

Week 25: Students will determine which grain or carbohydrate sources are suggested for a balanced meal.

Week 26: Students will determine which fruits and vegetables go with other sources of food for a balanced meal.

Week 27: Students will determine healthy sources of protein and dairy for a balanced meal.

Week 28: Students will tour a grocery store and learn where fresh produce, protein sources, and junk food are located (and why they are placed where they are).

Sample Lesson Plan – Week 28, Day 1

Objective: Students will implement what they have learned over the past few months to create healthy meals based on MyPlate standards.

References/Worksheets: https://fns-prod.azureedge.net/sites/default/files/tn/dmp_student2-1.pdf
MyPlate placemat

Materials: crayons, markers, colored pencils, MyPlate placemat sheets, plates, cups, apples, celery, nut butter, raisins, grape juice, orange juice, water, milk.

Procedure:

Time	Teacher Activity	Materials
3:00–3:15 pm	Ice breaker	Teacher discretion
3:15–3:30 pm	<p>Explain to students that today they will be building healthy meals based on what they have learned during this nutrition program.</p> <p>Hand out MyPlate placemat sheets and allow them to grab markers, colored pencils, or crayons.</p>	MyPlate Placemat sheet, markers, colored pencils, or crayons
3:30–4:00 pm	Allow students to work alone, or in groups. Instruct them to list their 5 favorite foods for each section of MyPlate. After they have determined what those foods are, they should draw small pictures of them in the appropriate section.	MyPlate Placemat sheet, markers, colored pencils, or crayons
4:00–4:15 pm	Student/Teacher break	
4:15–4:35 pm	<p>Ask students to share what they have colored/ written down.</p> <p>Ask 3 students to share what their favorite meal would be if they could only choose one food from each section.</p>	MyPlate Placemat sheet
4:35–4:50 pm	<p>Discuss the differences of their meals, and make connections.</p> <p>At this point, most students will grasp what foods make a healthy meal, and should be able to discuss why they have chosen these foods.</p>	MyPlate Placemat sheet
4:50–5:00 pm	<p>Wrap up.</p> <p>Ask if students need any clarification, and answer any appropriate questions that may arise.</p> <p>This will be one of the last entries in the students' food journal.</p> <p>Surprise them with their field trip to the grocery store during their next meeting!</p>	

Evaluation:

For this lesson, evaluation will be observed by what they have chosen to write down as their foods and ultimately what foods they would choose to make a complete meal under MyPlate guidelines. As I mentioned above, at this point student should have a sound understanding of what foods make a healthy meal and this is ultimately a fun activity for them to collaborate with others.

Theme 8: Origins of Food and Media Influence

- i. Farm to fork
- ii. Farmers Market field trips
- iii. Positive media influence
- iv. Negative media influence

Theme Objectives:

- 16. Students will identify what “farm to fork” means.
- 17. Students will examine local farmers markets and learn about what they have to offer compared to their local supermarket(s).
- 18. Students will engage in positive, and negative, social media applications related to food security and insecurity.

Sub-Theme Objectives:

Week 29: Students will identify different instances of “farm to fork” social constructs.

Week 30: Students will compare and contrast local farmers market(s).

Week 31: Students will determine what areas of media are for positive nutrition choices.

Week 32: Students will determine what areas of media are centered around poor nutrition choices.

Sample Lesson Plan – Week 29, Day 1

Objective: Students will identify different instances of “farm to fork” social constructs.

References/Worksheets: Activity 1: “Who Grew My Soup” book (\$7, ask district to buy this), fact wheel, food samples, food/farm connection matching cards.

Activity 2: Food item with product of origin label, where does my food come from activity sheets.

https://naitc-api.usu.edu/media/uploads/2016/02/09/Where_Does_My_Food_Come_From.pdf

Procedure:

Both of these activities call for about 45 minutes each. Please utilize time accordingly.

Teacher Activity**Activity 1: Food/Farm Connection**

1. Read the book *Who Grew My Soup?* by Tom Darbyshire.
2. Ask the students to create a list recalling the ingredients in Phin's soup (carrots, tomatoes, green beans, celery, corn, barley, spinach, peas, onions, potatoes).
3. Cut out and assemble the Fact Wheel (located at the end of the lesson). Each student can make their own Fact Wheel or it can be assembled prior to the lesson (one for each group).
4. Divide the class into 10 groups. Assign each group a food from the list. Give the groups enough time to match their food with the picture and information on the fact wheel. Provide a few samples of the ingredients for students to taste or observe while each group shares the facts about their food.
5. Ask the students if they think all of the ingredients in Phin's soup can be grown in Utah. The answer is yes. Ask the students if they think they can buy these ingredients locally grown all year long. Discuss what factors would affect the availability of locally grown food.
6. Pass one Food/Farm Connection card (located at the end of the lesson) to each student. Allow students to walk around the classroom and find the student who has their matching card. Students should match the food item with its farm source. (ex. Oatmeal – oats, French fries – potatoes, eggs – chicken, applesauce – apples) Discuss the connections as a class.



Activity 2: Where Does Your Food Come From?

1. Prior to the activity, ask students to find a food item with a product of origin label at home. (Be prepared with extra food and a computer at school for students who are unable to complete this assignment at home.)
2. Have each child complete the “Where Does My Food Come From?” activity sheet by using National Geographic’s Mapmaker Interactive, available online at https://naitc-api.usu.edu/media/uploads/2016/02/09/Where_Does_My_Food_Come_From.pdf, to find the distance between their food’s country of origin and the town in which they live. Instructions are found on the activity sheet. This can be completed as a homework assignment or in school depending on computer access.
3. As a class, locate the origin of each child’s food on a world map. Students can label each location on the activity sheet world map. Compare the distances and determine whose food traveled the farthest and shortest distances.
4. Discuss the different ways the food could have traveled to a local grocery store (truck, airplane, train, boat). What steps need to be taken to ensure that the food doesn’t spoil before arriving at the market?
5. What are some possible reasons the food traveled so far? Discuss how the climate of a particular location affects what foods can be grown there
6. Identify the different jobs involved in getting food from the farm to the table (i.e. grower, harvester, truck driver, packagers, processors, warehouse operators, grocers etc.).

If time allows, please continue on to activity 3 listed in the above PDF link...

Evaluation:

Evaluation for these activities will be observed simply by student interaction. There will be a lot of conversation, and potentially confusion, as many students only understand their food coming from the supermarket or grocery store. This lesson is designed to give students the resources to form educated thoughts and conversation related to the process that almost all of our food makes from farm, to supermarket, to fridge, to table, and finally our bellies! Just like many other lessons in this curriculum, we can observe whether or not information has been retained through their food journals/diaries.

Theme 9: Cook for your friends and family!

Meet once per week during this month.

All of these will need plastic gloves, plates, plastic utensils, small cups, and napkins

Basic kitchen utensils suggested i.e. hot plate, toaster oven, toaster, pan, spatula, mixing bowls

i. Whole-grain bagel with peanut butter and banana, calcium-fortified orange juice

- a. Whole grain bagels (½ bagel per student)
- b. Natural peanut butter (1 tbsp. per student)
- c. Bananas (½ banana per student) pre-sliced coin-sized
- d. Orange juice (6 oz. per student)
- e. Toaster

Procedure:

1. Pick 8 student volunteers, 2 for each step above (group 1, 2, 3, and 4)
2. Group 1 will toast the bagels in a toaster and put bagels on paper or reusable plates
3. Group 2 will apply 1 tablespoon of peanut butter to each half of the bagel
4. Group 3 will distribute ½ banana of slices per bagel
5. Group 4 will pour 6 oz. of orange juice

ii. Multi-Grain cheese and veggie quesadillas, fit sour cream

- a. Whole or multi-grain tortillas
- b. Boiled and mashed kidney beans
- c. Chopped onion (optional)
- d. Cilantro
- e. Diced or quartered cherry tomatoes
- f. Chopped/sliced red, orange, and yellow bell peppers
- g. Grated mozzarella and white cheddar cheeses
- h. Unflavored, non-fat Greek yogurt
- i. 1 lemon
- j. Grapes
- k. Milk (optional)
- l. Salt
- m. 2 hot plates
- n. 2 pans

Procedure:

1. To make "Sour Power" sour cream, combine yogurt with lemon juice and mix thoroughly. Make sure to remove any pulp or seeds.
2. Using a hot plate over light-medium heat, put tortillas in and heat up 2 minutes each side
3. Using the second hot plate on medium heat, combine bean mash, peppers, tomato, and onion. Lightly brown veggies
4. While the tortilla is still warm, apply $\frac{1}{4}$ cup of mozzarella and $\frac{1}{4}$ cup of white cheddar cheeses to one half of the tortilla
5. Place browned veggies in with the cheeses
6. Fold the tortilla over and cook for another 2 minutes on each side, or until the cheese has melted.
7. When finished, cut folded tortilla into 4 slices (2 slices per student)
8. Garnish with "Sour Power" sour cream and grapes
9. Serve with 6 oz. milk or 8 oz. water

iii. Pita pizzas, cherry tomatoes

- a. Tomato sauce
- b. Tomato paste
- c. Minced garlic
- d. Dried basil, thyme, and oregano
- e. Whole-wheat pita bread
- f. Green onion
- g. Red bell pepper
- h. Chopped mushroom
- i. Milk
- j. Toaster oven

**Procedure:**

1. Combine tomato sauce, tomato paste, garlic, basil, oregano, and thyme
*Tip, half as much tomato paste to tomato sauce i.e. 12 oz. tomato sauce to 6 oz. tomato paste
2. Turn pita upside down and spread with 2-3 tbsp of sauce
3. Top with chopped vegetables
4. Place in toaster oven and bake until edges are lightly brown (about 10 minutes)
5. Cut pitas in half, one half per student
6. Serve with 6 oz. milk

iv. Bean burrito with lettuce, tomato, and guacamole, rice, peach-mango salsa, milk

- a. Whole or multi-grain tortillas
- b. Shredded lettuce
- c. Boiled and mashed kidney beans
- d. Diced tomato
- e. Pre-made or fresh guacamole
- f. Brown rice
- g. Peaches
- h. Mangos
- i. Cheeses (optional)
- j. Milk

**Procedure:**

1. Cook rice using a rice maker or hot plate and pot
2. Using a hot plate and pan, heat up tortilla
3. Using a second hot plate and pan or microwave, heat up bean mash
4. Dice tomatoes, peaches, and mangos
5. After tortillas are heated, spread bean mash, lettuce, and peach-mango salsa in tortilla
6. Optional, add cheese blend
7. Add $\frac{1}{2}$ cup of cooked brown rice to each burrito
8. Cut burritos in half, one half will serve one student

Serve with 6 oz. milk



