THE DEVELOPMENT AND PILOT OF A CULINARY INTERVENTION DESIGNED
USING THE SOCIAL COGNITIVE THEORY TO TEACH
NUTRITION TO ADOLESCENT GIRLS

A Thesis

presented to

the Faculty of California Polytechnic State University,

San Luis Obispo

In Partial Fulfillment

of the Requirements for the Degree

Master of Science in Agriculture,

Specialization in Food Science and Nutrition

by

Julie Anne Chesson

January 2008

© 2009
Julie Anne Chessen
ALL RIGHTS RESERVED

COMMITTEE MEMBERSHIP

TITLE: The Development and Pilot of a Culinary Intervention
Designed using the Social Cognitive Theory to Teach
Nutrition to Adolescent Girls

AUTHOR: Julie Anne Chessen

DATE SUBMITTED: January 2009

COMMITTEE CHAIR: Dr. Lisa Nicholson, Associate Professor
Food Science and Nutrition

COMMITTEE MEMBER: Dr. Ann Yelmokas McDermott, Associate Professor
Kinesiology

COMMITTEE MEMBER: Dr. Jeff Sklar, Assistant Professor
Statistics

ABSTRACT

The Development and Pilot of a Culinary Intervention Designed using the Social Cognitive Theory to Teach Nutrition to Adolescent Girls

Julie Anne Chessen

In the past 20 years, the way in which food is prepared has rapidly changed. Convenience has become a way of life and Americans have replaced meals made from scratch with meals that are quick and easy. During that time, body mass index has risen steadily. The prevalence of overweight and obesity among children has become common in the American population. “Pink Chefs,” a six-week culinary intervention for middle school girls 12 to 14-years-old, was developed and piloted to combat childhood obesity by teaching nutrition through basic cooking skills. The social cognitive theory was used as the theoretical framework. The goals of this program were to increase the subjects’ self-efficacy for cooking; to build knowledge for healthful dietary practices; and to provide a fun and safe environment conducive for interactive learning. This culinary enrichment program was piloted in reduced-income communities in south San Luis Obispo County, California, with 22 self-selected participants. Surveys were used to measure self-efficacy, knowledge, barriers and diet pre- versus post-intervention. Post-intervention measures demonstrated a significant ($p = 0.005$) intervention effect on self-efficacy for cooking. No significant increases were observed for knowledge, barriers and diet. This research, like that of Larson et al. (2006), illustrated that honing both skills and knowledge learned in a practical setting is one of the first steps for increasing self-efficacy for dietary improvements.

Keywords: culinary intervention, cooking program, after-school program, Social Cognitive Theory, obesity, cooking skills.

ACKNOWLEDGMENTS

This past year at Cal Poly has prepared me to become a professional and successful community nutrition educator. I am grateful to many individuals for all of their support and encouragement throughout my graduate school career and I would like to formally acknowledge their efforts.

Firstly, I would like to thank my Committee Chair and Advisor, Dr. Lisa Nicholson. Her support and belief in my abilities has helped me learn and live at my fullest potential. I am truly grateful to have worked with such a supportive and knowledgeable mentor. Secondly, I would like to acknowledge Dr. Ann McDermott for recognizing my potential and gifting me with this opportunity to develop and hone my skills as a community nutrition educator. Her expertise has inspired and guided me through the trials and tribulations throughout the development and implementation of this culinary enrichment program. Furthermore, I would like to acknowledge Dr. Jeff Sklar for his expertise in the area of statistical procedures. Additionally, I would like to thank the following individuals who helped make this program a success: Jolene Hedges, Shelley Matson, Kerri Parker, and all of the Cal Poly student volunteers.

I would also like to thank my family for their encouragement and support. Specifically, I would like to thank my mom, dad, Stacy, Amie, nephews and my boyfriend's parents for all of their continuous support. Finally, I would like to thank Levi Gassaway, my Editor, who undoubtedly believed in my abilities. His guidance has inspired me to become a better person. For that reason, I would like to dedicate my thesis to Levi and our future together.

TABLE OF CONTENTS

List of Tables	viii
List of Figures	ix
Chapter 1	1
Introduction	1
Background	1
Definitions	4
Chapter 2	6
Literature Review	6
Synopsis of Nutrition Related Health Concerns in America.....	6
Nutritional Characteristics of At-home Meals and Convenience Meals	10
Theory-based Nutrition Education to Change Diet	15
Self-efficacy construct.....	17
Barriers.	18
Formative Research for a Community Educational Program	21
Kid’s chef school.....	21
Hunting for Whole Grains: a Supermarket Tour.....	21
Hunting for whole grains: a supermarket tour.....	21
Oklahoma cooperative extension service.	22
Oklahoma cooperative extension service.	22
Chef and child foundation program.....	22
Youth farm market project.	23
Food club.....	24
Cooking up fun.....	25
Go girls.....	26
Cooking classes for college sophomores.....	27
Cooking with class.	28
CookWell.....	28
Cooking with a chef.	29
Summary: Need for a Culinary Intervention	31
Chapter 3	33
Methods and Materials	33
Development of the Culinary Program	34
Institutional review board protocol.	35
Lesson content and development.	38
Establishment of a Community Network	40
Donations and funding.	40
Locations for the pilot programs.	42
Times for the pilot project in Oceano.....	43
Times for the pilot project in Arroyo Grande.....	44
Pilot project preparation.	45
Volunteer recruitment.....	45
Pink Chefs” Pilot Stud.....	46

Participants.....	46
Study design in Oceano.....	47
Study design in Arroyo Grande.....	49
Program completion.....	52
Data coding.....	52
Statistical analysis.....	54
Chapter 4.....	57
Results	57
Chapter 5.....	69
Discussion and Conclusion	69
Logistics and Management.....	69
Financial Allocation and Support.....	73
Points for Improvement.....	74
Strengths.....	75
Limitations.....	76
Weaknesses	76
Conclusions	79
Bibliography	81
Appendices.....	88

LIST OF TABLES

Table	Page
1. <i>Table 2.1: Prevalence of Obesity* Among U.S. Children and Adolescents (Aged 2-19 Years)</i>	7
2. <i>Table 2.2: Prevalence of Obesity* Among U.S. Adolescents by Gender and Ethnicity (Aged 12-19 Years)</i>	8
3. <i>Table 2.3: Summary of Studies Evaluated for Culinary Intervention Organized Chronologically</i>	30
4. <i>Table 4.1: “Pink Chefs” Demographics at Baseline and After Attrition</i>	58
5. <i>Table 4.2: “Pink Chefs” Baseline Characteristics of the Social Cognitive Theory Constructs</i>	60
6. <i>Table 4.3: Self-efficacy Score for Cooking for Each of the Seven Questions</i>	62
7. <i>Table 4.4: Knowledge Construct Measuring Correct Responses to Knowledge-Based Questions</i>	63
8. <i>Table 4.5: Marked Answers by the Participants to Knowledge-Based Questions for Each Response</i>	65
9. <i>Table 4.6: Barriers construct for each individual perceived barrier to cooking</i>	66
10. <i>Table 4.7: Proportion of Participants with Percent Fat of Total Daily Caloric Intake for Each of the Four Categories</i>	67
11. <i>Table 5.1: Projected sample sizes for self-efficacy and knowledge constructs with an alpha equal to 0.05.</i>	77

LIST OF FIGURES

Figure	Page
1. <i>Figure 1.1:</i> Body mass index classification for adults (World Health Organization, 2008).	5
2. <i>Figure 2.2:</i> Americans food expenditures (percent) spent on food at home versus away from home between the years 1962-2002.	13
3. <i>Figure 3.1:</i> Sample questions for pre- and post-questionnaires based on the Social Cognitive Theory constructs.	37
4. <i>Figure 3.2:</i> Chronological description of weekly lessons submitted to IRB.....	38
5. <i>Figure 3.3:</i> Developed lessons and goals for the “Pink Chefs” 6-week after school culinary and nutrition program.	39
6. <i>Figure 3.4:</i> Local organizations and businesses in support of the pilot programs through solicitation	41
7. <i>Figure 3.5:</i> Slight changes made to the lesson plans from Oceano to AG. Blue indicates the addition of a lesson; red indicates combining the lessons into one.	50
8. <i>Figure 4.1:</i> Histograms to demonstrate the shift in the students’ correct responses to knowledge-based questions for pre- (left graph) versus post-intervention (right graph)	64
9. <i>Figure 4.2:</i> Frequency graph illustrating the increased trend of participants’ correct responses to knowledge based questions with a “simulated control group” for attendance	68

CHAPTER 1

Introduction

“Pink Chefs” was a culinary intervention designed to develop and pilot a cooking program for middle school girls, ages 12 to 14-years, in San Luis Obispo County, California. Through the utilization of the social cognitive theory, a culinary program was specifically designed to effectively improve knowledge, behaviors, and skills for this population of interest. Practical cooking classes that teach nutrition through basic culinary skills are needed for the collaborative effort between health professionals and the community to reduce the prevalence of diet related health concerns. The goals of this program were: to increase the subjects’ self-efficacy for cooking and cooking healthfully; to increase the subjects’ knowledge related to cooking and of the USDA Food Guide Pyramid; to see if there is a positive association between nutrition education and cooking skills that could potentially impact the dietary intake of fruits, vegetables, and whole grains; and finally to decrease perceived barriers for cooking in this target population.

Background

The term “cooking skills” can be ambiguous. For the purpose of this study, “cooking skills” will be defined as using basic culinary skills to create a meal from scratch/raw ingredients or from commercially prepared products enriched with fresh ingredients, such as meat and produce. Some of the skills used will include dicing, slicing, chopping, sautéing and baking.

Prior to the last half of the 20th century, women have dominated the kitchen. During this time, coal and wood burning ranges were the only household tools other than the fireplace used for cooking (Lyon, Colquhoun and Alexander, 2003). In the year

1900, women spent approximately 44 hours per week on meal preparation, a task which included starting and maintaining oven temperatures, food preparation from scratch and clean up (French, Story and Jeffery, 2001).

During World War II, the United States along with many other countries suffered much strife. At that time, food culture changed as commodities were rationed to support the war effort (Lyon, Colquhoun and Alexander, 2003). Fresh eggs, milk and whole cuts of meat were considered a luxury (Lyon, Colquhoun and Alexander, 2003). During this time of limited resources, families were forced to hone their culinary skills in order to maximize the use of all available ingredients.

During the 1940s and 1950s, a major culinary breakthrough occurred mainly through technology. Gas and electric ranges began to replace coal and wood burning stoves. The evolution in technology and energy sources allowed for the reliable control of temperatures compared to past cooking tools. This technological advancement simplified meal preparation in the home. Paralleling the advancements in technology, women were advancing in the workforce. By 1950, 29 percent of women were employed outside the home (French, Story and Jeffery, 2001). Concurrently, the average amount of time spent in the kitchen decreased to 20 hours per week (French, Story and Jeffery, 2001).

In the early 1980s a relatively new cooking technology was becoming more prevalent in the American household, the microwave range. The use of microwaves marked a culinary transition from traditional cooking methods to predominantly reheating pre-prepared foods. By the late 1990s, approximately 90 percent of households had microwaves and on average were spending less than ten hours per week on meal

preparation (French, Story and Jeffery, 2001). This culinary trend of quick meals transferred cooking skills from the home to commercial food producers.

In conjunction with the increased frequency of pre-packaged meal consumption, the body weight of Americans began to dramatically increase (Flegal, Kuczmarski, and Johnson, 1998; Jeffery and Utter, 2003). This trend has resulted in more than 72 million American adults being classified as obese and 16 percent of American youths aged 2 to 19-years are obese or at high risk of becoming obese (Centers for Disease Control and Prevention, 2008).

Due to the transfer of cooking skills to commercial preparers, young people prepare meals that do not require much skill and effort (Lyon, Colquhoun and Alexander, 2003). In today's technological era, children perceive cooking skills as reading the instructions from a box as opposed to making meals from scratch (Lang and Caraher, 2001). From the United Kingdom's National Food Alliance Survey (1993), 54 percent of young people reported being able to make a cake from a packet compared to 38 percent of whom reported being capable of cooking a potato in an oven.

As previously mentioned, the term cooking skills has evolved over time. In the early 1900s, cooking required the mastery of numerous tasks for meal preparation. These skills were labor intensive and demanded on average of over 40 hours per week. In the late 1900s, cooking skills transferred from the home to commercial preparers and required an average of ten hours or less per week. According to Lang and Caraher (2001), the contemporary definition of cooking skills should include "re-heating or using the microwave." Since the consumption of commercially prepared products is a common practice and is a highly speculated cause of obesity, a community intervention that

teaches basic culinary skills may be an effective method to increase knowledge about nutrition and eating healthfully.

Definitions

For the purpose of this study, the following terms will be defined:

- 1) Convenience foods: "...fully or partially prepared foods, in which significant preparation time, culinary skills, or energy inputs have been transferred from the home kitchen to the food processor and distributor" (Traub and Odland, 1979; Candel, 2001).
- 2) Traditional at-home meals: "taking raw ingredients and turning them into complete culturally appropriate dishes" (Stead, Caraher, Wrieden, Longbottom, Valentine and Anderson, 2004).
- 3) Contemporary at-home meals: foods purchased in retail stores, such as supermarkets, convenient stores, grocery stores and farmers markets. These foods incorporate all ingredients used in food preparation, including ready-to-eat foods, such as a roasted chicken, frozen entrées, or a box of macaroni and cheese (Lin, Frazao and Guthrie, 1999). The ready-to-eat foods compliment a meal made from scratch.
- 4) Healthy: a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (World Health Organization, 1946).
- 5) Healthful foods: any food that is nutrient dense and shown to be 'good for you,' as demonstrated in the nutrition research literature on chronic diseases.
- 6) Knowledge based questions: questions that increase knowledge related to nutrition, the national dietary guidelines and the USDA Food Guide Pyramid.

- 7) Body Mass Index for adults: an index of weight-for-height (kg/m^2) commonly used to assess underweight, overweight, and obesity (Kuczmarski and Flegal, 2000). BMI is not a direct measure of body fatness (Centers for Disease Control and Prevention, 2000). There are specific international classifications for adult BMI. (See Figure 1.1).

Classification	BMI (kg/m^2)
Underweight	< 18.5
Normal Range	18.5-24.99
Overweight	25-29.99
Obese Class I	30-34.99
Obese Class II	35-39.99
Obese Class III	≥ 40

Figure 1.1: Body mass index classification for adults (WHO, 2008).

- 8) BMI measurement for children and adolescents (aged 2-19 years): BMI value is plotted on the CDC growth charts to determine the corresponding BMI-for-age percentile (CDC, 2000).
- a) Overweight: a BMI at or above the 85th percentile and lower than the 95th percentile.
 - b) Obesity: a BMI at or above the 95th percentile for children of the same age and sex.

CHAPTER 2

Literature Review

Synopsis of Nutrition Related Health Concerns in America

In today's culture, less time is spent in the kitchen as more women have entered the workforce and fewer individuals, male or female, have stepped in to fill this empty role in the home. Associated with the decrease in traditional cooking and the increased consumption of pre-prepared meals, there has been an increase in the prevalence of nutritional-related chronic diseases. Obesity increases the risk for developing chronic diseases and is caused from a high consumption of energy with low energy expenditure, an interactive relationship between genetic and environmental effects, or a combination of the two.

The National Health and Nutrition Examination Surveys (NHANES) data from 2003-2004 was used to estimate proportions of the population that were either overweight or obese. Ogden, Carroll, Curtin, McDowell, Tabak and Flegal (2006) discovered from the NHANES data that 32 percent of adults, ages 20 years or older, were obese. Regionally, the Center for Disease Control and Prevention (2006) conducted a similar study using telephone interviews and found that Mississippi and West Virginia had a prevalence of obesity greater than 30 percent.

As the proportion of overweight and obese adults has increased, the prevalence of overweight and obese children and adolescents has as well. Recent NHANES data illustrated that the prevalence of obesity in children and adolescents increased in the years between 1976-1980 to 2003-2006. Ogden et al. (2006) derived from the NHANES data that 17 percent of children and adolescents aged 2 to 19-years-old were overweight

in 2003-2004. Among the age groups 2 to 5, 6 to 11 and 12 to 19, there was a 7.4 percent, 10.5 percent and 12.6 percent increase in obesity rates, respectively (Ogden, Carroll and Flegal, 2008). (See Table 2.1).

Table 2.1: Prevalence of obesity among U.S. children and adolescents (aged 2-19 years)*

National Health and Nutrition Examination Surveys				
Age Groups	Survey Periods			
	1976-1980	1988-1994	1999-2002	2003-2006
2-5	5%	7.2%	10.3%	12.4%
6-11	6.5%	11.3%	15.8%	17.0%
12-19	5%	10.5%	16.1%	17.6%

*Gender and age specific BMI $\geq$ 95% percentile for children based on the CDC growth charts (Ogden et al., 2008).

The prevalence of overweight and obesity among children has become a common malady within the American population. According to Whitaker, Wright, Pepe, Seidel and Dietz (1997), approximately 80 percent of overweight children ages 10 to 15-years became obese adults by the age of 25. (See Figure 2.1).

Figure 2.1: Percent of U.S. children and adolescents aged 2-19 years considered obese between the years of 1971 to 2006 (US Department of Health and Human Services, 2008).

Among adolescents aged 12 to 19-years, obesity was especially common among Non-Hispanic African American and Mexican American youths. (See Table 2.2). Overall, females showed a greater increase compared to males. Non-Hispanic whites showed no gender difference. Non-Hispanic African American females had a 14.5 percent change compared to the 12.2 percent change for males. Mexican American females had a 10.7 percent change compared to the 7.0 percent change for males (Ogden et al., 2008).

Table 2.2: Prevalence of obesity among U.S. adolescents by gender and ethnicity (aged 12-19 years)*

National Health and Nutrition Examination Surveys				
<i>Race/Ethnicity</i>	<i>Survey Periods</i>			
	Male		Female	
	1988-1994	2003-2006	1988-1994	2003-2006
Non-Hispanic White	11.6%	16.0%	7.4%	14.5%
Non-Hispanic African American	10.7%	22.9%	13.2%	27.7%
Mexican American	14.1%	21.1%	9.2%	19.9%

*Gender and age specific BMI $\geq$ 95% percentile for children based on the CDC growth charts (Ogden et al., 2008).

Hispanics are one of the fastest growing minority groups in the United States (USDA, 2007), including approximately 60 percent of first and second generation Hispanic-American youth (Gordon-Larsen, Harris, Ward and Popkin, 2003). Researchers investigated data from the National Longitudinal Study of Adolescent Health to determine how acculturation (defined as “the acquisition of dominant cultural norms by members of a non-dominant group” (Gordon-Larson et al., 2003)) factors were associated with weight gain among U.S. immigrants (Gordon-Larson et al., 2003). Among 8,613 American youths in grades 7 to 12, results indicated that the prevalence of overweight

and obesity were higher among “US-born” versus “foreign-born” immigrants. Foreign-born immigrants also watched significantly less television and videos and consumed more fruits and vegetables compared to native-born adolescents (Gordon-Larson et al., 2003). This study suggests that Hispanic-American youth in America are likely to be influenced by sedentary lifestyles and increased consumption of high-fat, energy-dense foods.

Obesity increases the risk for developing multiple health conditions and chronic diseases. These health concerns include heart disease, some cancers, type 2 diabetes, and hypertension along with other health conditions. Heart disease was the cause of more than six million hospitalizations every year (CDC, 2008). Heart disease was this nation’s leading cause of death accounting for more than 35 percent of all deaths in 2007 (CDC, 2008). The cost incurred from the effects of heart disease and stroke was projected to be greater than \$448 billion in 2008 (CDC, 2008).

Type 2 diabetes has also been linked to obesity and inactivity (CDC, 2008). Type 2 diabetes is the leading cause of blindness, kidney failure, and amputations in the U.S. when untreated or not controlled in the United States (CDC, 2008). Type 2 diabetes, non-insulin dependent or adult on-set, is characterized by high blood glucose concentrations as a result of the body’s resistance to insulin, a defect in the production of insulin, or both. Approximately 5.9 percent of the US population has been diagnosed with type 2 diabetes, with an estimated additional 1.8 percent of individuals having yet been diagnosed (CDC, 2008).

Poor diet and lack of exercise are two common lifestyle factors contributing to the prevalence of obesity, which in turn increases the risk of youth developing “bone and

joint problems, sleep apnea, and social and psychological problems such as stigmatization and poor self-esteem” (CDC, 2008). Since obese children are more likely to become obese adults, this puts youth at an increased risk for chronic health concerns such as heart disease and type 2 diabetes (Garn and LaVelle, 1985; Magarey, Daniels, Boulton and Cockington, 2003; Patrick and Nicklas, 2005).

Since 1990, the frequency of type 2 diabetes among children and adolescents has increased. Recently, type 2 diabetes has become one of the most common chronic diseases among children and teens and accounts for 45 percent of the new-onset diabetes cases among adolescents (Pinhas-Hamel and Zetter, 2005). SEARCH for Diabetes in Youth (2004), a multi-center study funded by the CDC and the National Institute of Diabetes and Digestive and Kidney Disease (NIDDK), compiled data identifying the incidence, prevalence, and type classification of type 2 diabetes among youth younger than 20 years old in the United States. Approximately one in 400 to 500 young people under the age of 18 has type 2 diabetes (The SEARCH for Diabetes in Youth, 2004).

Chronic health conditions can be prevented with proper diet and exercise. The occurrence of overweight and obese individuals in America has been highly correlated to food choices, especially to convenience foods such as hamburgers, French fries, and fried chicken (Carlson and Gerrior, 2006). The apparent association between obesity and chronic illnesses among youth demonstrates the heightened need for nutrition education interventions, which may aid in the prevention and management of such infirmities.

Nutritional Characteristics of At-home Meals and Convenience Meals

One way to combat the poor diet and health relationship is to encourage at-home cooking. Foods prepared at-home tend to be much more nutrient dense and appetite

satisfying than convenience foods. The nutritional benefits of at-home meals versus convenience foods include: lower calories, saturated fat, and cholesterol and increased levels of iron, fiber, and calcium (Lin et al., 1999).

Consumers pay more attention to the nutritional qualities of meals when eating at-home (Lin and Frazao, 1997; Lin et.al., 1999). When eating foods from restaurants, consumers typically have less information about the nutritional quality of the meal (Guthrie, Derby and Levy, 1999). Additionally, consumers may view the act of eating-out as an exception from normal dietary habits and as an opportunity to “splurge,” regardless of how often eating-out may occur (Guthrie et al., 1999).

Carlson and Gerrior (2006) conducted a study analyzing the Continuing Survey of Food Intake by Individuals (CSFII) from the years 1994 to 1996 to determine if there was an association between food source and diet quality. Overall, diet quality was superior for the individuals classified as “Home Cookers.” Approximately 92 percent of the “Home Cookers” food was purchased from grocery stores, discount stores, food co-operations or specialty stores (Carlson and Gerrior, 2006). “Home Cookers” also scored highest for the Healthy Eating Index (HEI) (a measure of diet quality based on the federal dietary guidelines), scoring a 64.5 on an 100-point scale. Although this score denotes that there is room for improvement in diet quality, the “Home Cookers” overall eating pattern was low in total fat, saturated fat, cholesterol, and sodium (Carlson and Gerrior, 2006).

Another potential benefit of contemporary at-home cooking is family interaction and bonding. Family interaction and involvement influences dietary choices (Verlegh and Candel, 1999; Bove, Sobal and Rauschenbach, 2003). An active interest in family

meal preparation develops a baseline of culinary skills and for using recipes that contain raw and basic ingredients. Involvement in cooking meals contributes to a sense of belonging (Stead et al., 2004; Lautenschlager and Smith, 2007), which suggests that participation in contemporary at-home meal preparation could increase an individual's self-efficacy for cooking and simultaneously improve diet quality (Larson, Story, Eisenberg and Neumark-Sztainer, 2006).

Children learn through personal experience. Food and family interactions strongly influence a child's eating behaviors, values, and attitudes towards food choices (Reimer, Smith, Reicks, Henry, Thomas and Atwell, 2004). "Project EAT (Eating Among Teens)" was a study conducted in Minnesota and was designed to investigate adolescents', ages 11 to 18-years, involvement in family meal preparation and the resulting potential association with diet quality (Larson et al., 2006). Adolescents who reported regular participation with family meals were also found to have greater involvement with food purchasing and meal preparation (Larson et al., 2006). In general, adolescent involvement with family meal preparation was associated with a more nutrient-dense eating pattern.

In the past 20 years, the way in which food is prepared has rapidly changed. Convenience has become a way of life and Americans have replaced meals made from scratch with convenience meals (Traub and Odland, 1979; Taveras, Berkey, Rifas-Shiman, Ludwig, Rockett, Field, Colditz and Gillman, 2005; Short, 2007). Over the past 40 years, the frequency of eating convenience foods has increased 13 percent from 1977-78 to 1995 (Lin et al., 1999). (See Figure 2.2). Consumers spent over one billion dollars on convenience foods in 2006, a 6.6 percent increase compared to 2005 (USDA, 2007).

The frequency of consumption indicates that the nutritional qualities of convenience foods are extremely important to America's overall diet quality (Kuchler, Golan, Variyam and Crutchfield, 2005).

Figure 2.2: American's food expenditures (percent) spent on food at home versus away from home between the years 1962-2002 (source USDA, ERS, 2005).

Along with the increased consumption of convenience foods, body mass index has also risen steadily. This analogous trend suggests a relationship between food choice and BMI (Carlson and Gerrior, 2006). In a study evaluating food frequency questionnaires of 73 subjects, participants who consumed more restaurant meals had a greater daily caloric and percent fat intake, decreased fiber and a higher BMI compared to those who ate out less (McCrary, Fuss, Hays, Vinken, Greenberg and Roberts, 1999; Carlson and Gerrior, 2006). In summation, individuals consuming more convenience foods are at a greater risk for weight gain.

The Growing Up Today Study, a prospective cohort established in 1996, consisted of offspring from the participants of the Nurses' Health Study II (Taveras et al., 2005). Data from this study was used to examine the association between consuming fried foods away from home and BMI in older children and adolescents ages 9 to 14-years (Taveras et al., 2005). From the authors' findings, boys and girls aged 13 to 14 years consumed more fried foods away from home than any other age group (Taveras et al., 2005). Also, participants who increased the consumption of fried foods away from home from "never or <1 per week" to "4 to 7 per week" had a statistically significant increased BMI of approximately 0.21 kg per m² over a four year period (Taveras et al., 2005). The consumption of fried foods away from home was also associated with weight gain.

The nutritional content of convenience foods has become increasingly important to the diet quality of American individuals. Convenience meals contain higher calories than contemporary at-home foods (Lin and Frazao, 1997; Lin et al., 1999; French, Story and Jeffery, 2001; Kant and Graubard, 2004; Carlson and Gerrior, 2006). Fats, saturated fats, and cholesterol were all consumed in excess amounts, generally accounting for an overconsumption of energy compared to the recommended daily allowance of 29 percent of total calories from fat based on a 2000 calorie diet (USDA, 2006). On average, convenience foods contained seven more grams of total fat and two more grams of saturated fat per 1,000 calories (Lin and Frazao, 1997; Carlson and Gerrior, 2006). Fat intake exceeding 35 percent of total daily caloric intake was associated with increased saturated fat consumption (USDHHS, 2005).

Sodium chloride, table salt, is another nutrient that is over-consumed when eating convenience foods. The United States Department of Agriculture (2005) recommends an intake of sodium less than 2,300 milligrams (less than one teaspoon per day of table salt) until updated dietary recommendations are published in 2010. Sodium has been linked to hypertension, which can generate health complications such as coronary heart disease (USDHHS, 2005). Americans' average sodium intake has increased from approximately 3,000 mg in 1987-88 to 3,400 mg in 1995. This increase has been attributed to the increased consumption of convenience foods (Lin and Frazao, 1997). For disease prevention, consumers of convenience foods need to be aware that the sodium levels in convenience foods are typically higher than in foods prepared in the home.

The diet quality of Americans needs to be improved. Lin and Frazao (1997) analyzed the intake of calcium, fiber, and iron and found that these food components were being consumed at low levels and should be increased to improve the overall quality of the average American diet. The Healthy Eating Index-2005 scores illustrated low diet intake of foods such as fruits, vegetables, whole grains and milk (USDA, 2008). Overall health may be improved if these diet changes are practiced in American culture.

Theory-based Nutrition Education to Change Diet

As previously emphasized numerous factors influence food choices and family meals. The way in which Americans have shifted from traditional cooking skills to convenience foods is just one environmental (external) factor related to diet quality. This devolution of cooking skills and knowledge is passed down through the generations (Short, 2007). The disappearance of home economics from schools and the lack of cooking skills learned through parental modeling are two factors contributing to the

decline of cooking skills among youths (Short, 2007). After the near extinction of traditional cooking skills, health educators need to re-develop and instill the knowledge and skills for contemporary cooking in a population almost entirely lacking any culinary foundation.

The social cognitive theory is commonly used to understand human thought, motivation and action as applied to the area of diet and health for children and adolescents (Lytle and Achterberg, 1995; Caballero, 2004). The social cognitive theory examines how personal, behavioral, and environmental factors work together to influence health related behaviors (Contento, 2007). (See Figure 2.3). Personal factors are internal thoughts and feelings. Behavioral factors include food, nutrition and health-related knowledge and skills. Environmental factors are external influences such as physical and social environments (Contento, 2007).

Figure 2.3: Social cognitive theory constructs (Contento, 2007).

Self-efficacy Construct

Self-efficacy, “people’s judgments of their capabilities to execute given levels of performance,” is a central construct linking the relationship between personal, behavioral, and environmental factors (Bandura, 1984). Self-efficacy involves personal control and requires knowledge, skills, and confidence to effectively motivate and sustain behavioral changes (Contento, 2007). Increased confidence for perceived self-efficacy can be achieved through learning to master a behavior through practice; observing others model the behavior; encouragement by others to succeed; and modifying emotional and physical responses to stressful situations (Contento, 2007).

Self-efficacy has been a useful tool in the prediction of health behaviors. Research and intervention studies that used self-efficacy as a measure for behavioral changes support the idea that observing others will encourage the intended behavior. *Super Size Me* is a film that addressed the increased risk factors associated with consuming fast food. A study was conducted on the film’s effectiveness and the impact of broadcast media on college students’ self-efficacy and knowledge for consuming fast food (Cottone and Byrd-Bredbernner, 2007). Students exposed to the film reported an increased self-efficacy for reducing fast-food intake (Cottone and Byrd-Bredbernner, 2007). By modeling unhealthy dietary practices, the film’s intent for healthful behavioral changes among college students was successful.

The social cognitive theory is often used as a theoretical framework for nutrition interventions. Rinderknecht and Smith (2004) focused on dietary self-efficacy, “one’s perceived capability to choose more healthful foods,” to improve diet quality among

Native American youths ages 5 to 18 years. During this seven-month after school program, lessons focused on typical experiences that youth encounter, for example students were taken to a fast-food restaurant and shown healthier options. The impact of a nutrition intervention significantly ($P = 0.002$) increased dietary self-efficacy for choosing healthful options among 5 to 10-year-old children and increased dietary self-efficacy among 11 to 18-year-old youths (Rinderknecht and Smith, 2004).

Another study investigated self-efficacy phases to further understand the association between individual beliefs and health behaviors (Schwarzer and Renner, 2000). This study explored behavioral predictors of pre-intention (action self-efficacy) and post-intention (coping self-efficacy) at baseline and six months later of 580 adults with a mean age of 43 years. At baseline, risk perception, outcome expectancies, action self-efficacy, and intentions were measured. During follow-up, coping self-efficacy and low-fat and high-fiber dietary intakes were measured. Individuals who reported a higher self-efficacy for low-fat and high-fiber diets had more healthful behaviors (Schwarzer and Renner, 2000). This study demonstrated that self-efficacy exerted the strongest influence for behavioral intentions among this population (Schwarzer and Renner, 2000).

Barriers to Cooking

Barriers, part of the assessment of self-efficacy, are obstacles individuals must overcome in order to meet goals related to behavioral changes. Some barriers may be personal, such as lack of confidence for cooking; others may have negative outcomes associated with healthful dietary changes, such as cooking a meal takes too much time and effort (Contento, 2007). Some barriers are external or environmental, for example

lack of availability to healthful foods. The following are additional critical barriers associated with healthy food consumption:

- A) flavor, taste, texture, smell, and appearance (Lautenschlager and Smith, 2006);
- B) inability or lack of confidence to prepare healthful inexpensive meals (Hyland, Stacy, Adamson and Moynihan, 2005);
- C) busy or conflicting schedules, dislike of family meals, dissatisfaction with family relationships and the desire for independence (Story, Neumark-Sztainer and French, 2002);
- D) and the process, time, and failed meals (Lautenschlager and Smith, 2006).

Some of the factors contributing to America's increased consumption of take-aways are:

- 1) rising incomes;
- 2) scarcity of time;
- 3) and the demand for convenience (Lin and Frazao, 1997).

The increase in spending on take-away meals is potentially associated with the growth in employment resulting in a larger household income. In 2006, 73 percent of the US population ages 20 to 64-years were employed (U.S. Census Bureau, 2006) compared to 47 percent in 1975 (Jabs and Devine, 2006). Financial allocation on take-aways has risen by approximately five to six percent per decade (Kant et al., 2003) due to increased employment and incomes. In 2003, the average American family spent 41 percent of food expenditures on take-aways compared to nearly half that 40 years ago (WSU Stevens County Extension, 2003).

In the beginning of the 20th century, 21 percent of women were in the work force compared to 60 percent of women by 1998-1999 (French, Story, and Jeffery, 2001). By the late 1990s, nearly 90 percent of US households owned a microwave and spent less than 10 hours per week on meal preparation (French, Story, and Jeffery, 2001).

The increase of women in the work force has added to the demand for convenience. Women are allocating more time to work related activities rather than to traditional home responsibilities, such as meal preparation (Capps et al., 1985; French, Story, and Jeffrey, 2001). The United States Department of Labor (2000) reported that the proportion of women in the labor force had increased by 26 percent over the last half of the 20th century. This data confirms that the increase of employed women is rising concurrently with an increase in consuming take-aways. The world is changing and no one is stepping up to fill the void in cooking at home. Time scarcity, associated to women's involvement in the work force, is another critical barrier contributing to decreased meal preparation in the home (Larson et al., 2006; Stead et al., 2004). Capps et al. (1985) studied time constraints in conjunction with household size and hypothesized that large households were more likely to delegate meal preparation responsibilities compared to smaller households. Contrary to that theory, meal preparation decreased as household size increased (Capps et al., 1985). Universally, families and individuals have been reducing the amount of time they spend preparing meals by nearly 80 percent as compared to 1980 (Berghofer, 2005).

Formative Research for a Community Educational Program

Kid's Chef School

Ohio State University Extension developed the “Kid’s Chef School” program to teach second- and third-grade students basic living skills through hands-on learning (Clark and Foote, 2004). Each one-and-a-half to two-hour session was conducted as a one-time class, twice annually. While implementing this program over the past twelve years, the participants demonstrated an increased knowledge for food preparation (62%) and food safety (26%), increased knowledge about nutrition (13%) and increased understanding of manners (25%) (Clark and Foote, 2004). Overall, this program indicated growth in confidence for food preparation.

Hunting for Whole Grains: a Supermarket Tour

The inclusion of field trips into nutrition education curriculums has demonstrated positive effects. “Hunting for Whole Grains: a Supermarket Tour” was designed to increase consumer knowledge of whole grains (Lafferty, Marquart and Reicks, 2006). This study included two separate field trip sessions for selected fourth and fifth grade students: one during school hours for students only and the other was held during the evening for students paired with parents. The project included an educational element and a guided tour. The children involved in the school field trip demonstrated significant ($p < 0.001$) improvement in knowledge regarding whole- and refined-grain terms post-intervention (Lafferty et al., 2006). The children ($p < 0.01$) paired with their parents ($p < 0.003$) significantly increased their skills in identifying whole-grain foods following completion of the field trip (Lafferty et al., 2006). The parents also significantly ($p <$

0.005) increased their knowledge regarding whole and refined-grain terms (Lafferty et al., 2006). This supermarket intervention established a successful environment for family interaction with the intent to incorporate whole-grains into daily meals.

Oklahoma Cooperative Extension Service

The Oklahoma Cooperative Extension Service developed a cooking program designed to increase fruit and vegetable intake, as well as improve food safety among youths and adults (Brown and Hermann, 2005). Classes were held over an eight-week period, with one lesson given by a trained educator per week. The classes incorporated various preparation techniques of fresh fruits and vegetables, such as baking, frying, microwaving, grilling, steaming, etc. Both the youth and adults significantly increased their average amount of fruit ($p < 0.0001$) and vegetable ($p < 0.0001$) consumption per day (Brown and Hermann, 2005). In addition, both groups significantly improved food safety techniques such as, hand washing before food preparation ($p < 0.0001$), pre-washing produce prior to cooking for both youths ($p < 0.0001$) and adults ($p < 0.0008$), and the habitual use of a clean knife and cutting board to avoid cross contamination (Brown and Hermann, 2005). Overall, this practical culinary intervention demonstrated an improvement in diet quality and food safety for youths and adults.

Chef and Child Foundation Program

The American Culinary Federation worked with the Chef and Child Foundation Program (C&C) in North Carolina to develop a hands-on curriculum designed to improve diet quality of 8 to 12-year-olds by introducing healthful ingredients and culinary skills (Dougherty and Silver, 2007). The educators for the C&C cooking classes conducted a

consecutive 5-day series of 2-hour periods. Each session incorporated a fifteen-minute lecture on the daily topic, a practical cooking lesson, and interactive activities. Out of 36 participants, 31 students completed the pre- and post-questionnaires: 97 percent reported an enhanced level of culinary skills, 90 percent stated they had an increased enjoyment for cooking and 58 percent claimed they expanded their nutritional knowledge (Dougherty and Silver, 2007). The researchers suggested that future plans for culinary interventions should include longer class times and more refined questionnaires, as the results for this program were deemed statistically inconclusive (Dougherty and Silver, 2007).

Youth Farm Market Project

The “Youth Farm Market Project” (YFMP), developed for inner-city youths, ages 8 to 13 living in reduced-income communities in Minneapolis/St. Paul, focused on practical gardening techniques to improve food choice (Lautenschlager and Smith, 2007). This ten-week garden project involved an array of activities and topics concerning the food system: gardening, harvesting, cooking, and eating (Lautenschlager and Smith, 2007). Through the use of the Theory of Planned Behavior, the authors evaluated constructs associated with health-related outcomes, such as intentions, subjective norms (an individual’s conception of what others’ perceptions of what the individual should, or should not, do), perceived behavioral control, and attitudes towards behavioral changes (Lautenschlager and Smith, 2007).

Each YFMP lesson started with an exercise component, typically a game incorporating physical activity. A nutrition educator instructed on a new daily topic and fostered learning through interactive role-playing (Lautenschlager and Smith, 2007). The

participants were then assigned to a group: gardening or cooking. At lunch, the two groups congregated to share and discuss the ethnic meal prepared by the youth cooks (Lautenschlager and Smith, 2007). The authors stated that using fresh fruits and vegetables for preparing ethnic dishes gave the subjects experience of working with healthier ingredients, which promoted a healthier diet (Lautenschlager and Smith, 2007). Through focus group discussions, many participants expressed an enjoyment for gardening and planned to continue gardening into adulthood. The youths' responsibility of caring for a garden can be credited with fostering respect and appreciation for the food system (Lautenschlager and Smith, 2007).

Food Club

The "Food Club," an after-school program for youth's 11 to 12-years-old was designed to promote dietary changes through practical culinary classes in reduced-income areas in England. The cooking sessions were constructed to promote dietary changes in accordance with the UK nutritional recommendations (Hyland et al., 2005). The after-school program was conducted weekly for five months in two-hour sessions. Post-intervention measures demonstrated an increased knowledge of food safety as well as basic cooking skills of chopping, frying and using a pressure cooker (Hyland et al., 2005). After the completion of the program, 75 percent of the participants mentioned "learning to cook" as one of the three best attributes of the club (Hyland et al., 2006).

As previously observed from the "Hunting for Whole Grains: a Supermarket Tour," children and adolescents may influence food choices in the family setting (Lafferty et al., 2006). The authors of the "Food Club" interviewed parents to identify parents' overall perspectives about the program (Hyland et al., 2005). According to the

parental responses, 30 percent of the parents stated that their children greatly influence the family's grocery shopping (Hyland et al., 2005). However, the majority of the parents indicated that the children did not influence food consumption among other family members, which disagrees with a previous study conducted by Lafferty et al. (2006).

Although the "Food Club" intervention suggested that the participants did not influence diet quality among family members, there was one exception. One subject changed his family's diet by using less fat in cooking (Hyland et al., 2006). Although, this change was not deemed statistically significant, it is a positive step in changing the diet quality of the community.

Cooking Up Fun!

"Cooking Up Fun!" (CUF) was an after school program created for 9- to 15-year-olds in seven New York counties for developing independent culinary skills in conjunction with healthful eating (Thonney and Bisogni, 2006). The CUF program consisted of four or six-90 minute classes. The way in which this program was designed showed a positive association, although not statistical significance, for increased skills, knowledge and behaviors related to food preparation. For this reason, the authors suggested that future work should focus on the following areas: refining and improving evaluation tools; comparing this method to traditional approaches; and observing interactions in the family environment regarding food (Thonney and Bisogni, 2006).

Go Girls!

“Go Girls!” was an after school nutrition and physical activity program designed using the Social Cognitive Theory for inner-city, reduced-income, overweight African American adolescent girls ages 11- to 17-years in Atlanta, Georgia (Resnicow, Yaroch, Davis, Wang, Carter, Slaughter, Coleman and Baranowski, 2000). This program emphasized reducing high-fat food consumption, increasing fruit and vegetable intake, portion control as well as daily physical activity (Resnicow et al., 2000). This community intervention was conducted four times over a two year period (Resnicow et al., 2000). Each session included an interactive educational/behavioral activity; 30-60 minutes of physical activity; and the preparation of reduced-fat meals (Resnicow et al., 2000). “Conditioned satiation,” satiety training, was a behavior emphasized in the group, since the participants were prone to eating second helpings and large portions (Resnicow et al., 2000). Other sessions included field trips to the local grocery store and farmer’s market (Resnicow et al., 2000).

The investigators of the “Go Girls!” program simulated a control group by segregating the sample according to attendance, less than 50 percent were “Low Attenders” and greater than 50 percent were “High Attenders” (Resnicow et al., 2000). Although this attendance classification was somewhat arbitrary, a higher reference point (75%) was desired, but not possible due to the insufficient sample size (Resnicow et al., 2000). In comparison of the control, “Low Attenders,” versus the intervention, “High Attenders,” the intervention group showed significantly greater nutrition knowledge scores ($p = 0.001$); more low-fat practices ($p = 0.05$); perceived positive dietary changes ($p = 0.04$); and more social support from family and friends ($p = 0.05$) (Resnicow et al.,

2000). The “Go Girls!” program was well designed in terms of outcome expectations and social norms. However, this intervention did not adequately address the self-efficacy and skills needed to make long term dietary and exercise changes (Resnicow et al., 2000).

Cooking Classes for College Sophomores

Cooking classes for college sophomores was an intervention designed to increase knowledge, skills, and confidence for cooking; improve attitudes towards cooking; and increase the number of meals prepared in the home (Levy and Auld, 2004). Students were recruited in fall of 2002 from Colorado State University to participate in the study (Levy and Auld, 2004). The investigators randomly assigned subjects to either the one-hour cooking demonstration (control) or the participatory cooking classes (intervention) (Levy and Auld, 2004). The intervention consisted of four two-hour sessions and one 45-minute supermarket tour (Levy and Auld, 2004). The control group received identical information regarding knife skills, recipes, pantry supplies, cooking instruments, and shopping tips, but no practical exercises (Levy and Auld, 2004). Based on the Social Learning Theory, all constructs were addressed during the intervention: environment, expectations, self-efficacy for a desired behavior, modeling, and reinforcement (Levy and Auld, 2004). The investigators found that the intervention group was significantly different from the control group in attitudes for the benefits of cooking ($p < 0.05$), liking to cook ($p < 0.01$), and the confidence of using various cooking techniques ($p < 0.01$) (Levy and Auld, 2004). This study exhibited the need for practical culinary classes, as opposed to cooking demonstrations, to stimulate a change in attitudes, behavior, and knowledge for cooking meals in the home.

Cooking with Class

“Cooking with Class” was created to enhance the desire to practice culinary skills at a university in North Carolina (Meloche, 2003). The population of interest was university faculty and staff; participants were mainly white females over 40 years of age. The classes consisted of four sessions, one per month during fall semester (Meloche, 2003). The primary focus was to develop an intervention that participants were eager to attend. The secondary objective was to teach nutrition education through class discussions of the seasonal recipe, which focused on reducing fat while increasing consumption of fruits and vegetables (Meloche, 2003). Although this study did not record any dietary measures, the hands-on program exposed participants to nutrition related knowledge and allowed the subjects the ability for dietary improvement.

CookWell

“CookWell” was a large community-based intervention designed to improve nutritional quality among adults in reduced income areas in Scotland (Stead et al., 2004). Stead et al. (2004) held 90-minute focus groups for potential participants in the program to examine several topics the subjects would like to see included in a course. The focus groups discussed grocery shopping experiences, food preparation and feelings about cooking (Stead et al., 2004). Several of the subjects stated that the culinary jargon was difficult to interpret (Stead et al., 2004). Others felt that planning, shopping and meal timing was difficult to apply in a kitchen (Stead et al., 2004). Following evaluation of the focus groups, the “CookWell” study group began to develop the culinary intervention.

This educational program implemented cooking classes in an effort to increase cooking confidence and promote a healthful diet (Wrieden, Anderson, Longbottom,

Valentine, Stead, Caraher, Lang, Gray and Dowler, 2007). This program conducted two-hour sessions and was offered weekly for a two and a half month period. Each lesson included an educational and practical element (cooking skills). Subjects showed an increase in their confidence for cooking certain dishes and following recipes immediately after completion of the intervention (Wrieden et al., 2007). The subjects also demonstrated a significant ($p = 0.05$) increase of fruit consumption post-intervention (Wrieden et al., 2007). These results suggest that cooking skills interventions can contribute to diet quality.

Cooking with a Chef

“Cooking with a Chef” was designed for adults to encourage and motivate families to manage food resources, to increase confidence for cooking skills and to improve their family’s diet quality in South Carolina communities (Condrasky, Graham and Kamp, 2006). Held at Head Start facilities, the program consisted of six weekly two-hour classes. The program’s message, “cooking healthful meals can be simple,” was promoted through basic nutrition, food selection, menu planning, time management and basic culinary skills (Condrasky et al., 2006). At the end of each session, the participants were sent home with a fact sheet and a bag of ingredients needed to replicate the recipe for their families. Although the program did not demonstrate statistical significance, this culinary intervention had a positive effect on food related behaviors: participants were more likely to shop with a grocery list, read the “Nutrition Facts” label when making food choices and eliminate habits of thawing food at room temperature post-intervention. The authors recommended the idea to train a full-time chef for cooking interventions within a church community (Condrasky et al., 2006).

Table 2.3: Summary of studies evaluated for culinary interventions organized chronologically.

Study	Objective	Design	Subjects	Outcome
Resnicow et al. (2000)	Focused on reducing high-fat consumption, increasing fruits & vegetables, portion control awareness, and increasing physical activity	6-month program; 2 sessions/week in the first 4 months, weekly sessions for the remaining 2 months	11-17-year-olds	Intervention Group vs. Control: + Nutrition knowledge (P = 0.001) + Perceived positive dietary changes (P = 0.04) + Low-fat practices (P = 0.05) + Social support (P = 0.05)
Meloche (2003)	Enhance the desire of culinary practices, focusing on reducing fat while increasing F&V consumption	4 sessions; 1 per month during fall semester	Mainly white, female women ; age > 40 years	No record of dietary measures; participants expressed interest in the program
Clark and Foote (2004)	Learn basic living skills	1.5-2 hour sessions twice per year	2 nd & 3 rd graders; 20 students per session	Increased knowledge: + Food preparation 62% + Food safety 26% + Nutrition 13% + Understanding manners 25%
Levy and Auld (2004)	Increase knowledge, skills and confidence for cooking; improve attitudes towards cooking; increase at-home cooking	Intervention: 4 2-hour sessions with 1 supermarket tour Control: 1-hour cooking demonstration	College students from Colorado State University Intervention (n = 33) Control (n = 32)	Intervention Group vs. Control: + Benefits of cooking (P < 0.05) + Like to cook (P < 0.01) + Confidence for using various techniques (P < 0.01)
Brown and Hermann (2005)	Cooking intervention to increase fruit and vegetable intake and improve food safety behaviors among youth and adults	8 classes in a 2 month period	602 individuals: youth (n = 229) avg. age 12 adults (n = 373) avg. age 57	Fruit (2 servings/day): + youth (P < 0.0001) + adults (P < 0.0001) Vegetables (3 servings/day): + Youth (P < 0.0001) + Adults (P < 0.0001)
Condrasky et al. (2006)	Help families food manage resources, increase confidence for cooking skills, improve diet quality of families	2-hour weekly classes for 6 weeks	n = 41 mean age = 25 African American 60% Hispanic 30% White 10%	Inconclusive data; participants were more likely to shop with a grocery list, read the "Nutrition Facts" label and eliminate habits of thawing food at room temperature
Hyland et al. (2006)	Investigate the effectiveness of an after school 'Food Club' teaching practical food preparation to improve diets of reduced-income families	Weekly 2 hour sessions for 20 weeks	11-12-year-olds girls (n = 61) boys (n = 37) 10 secondary schools; 5 control & 5 intervention	75% listed learning to cook as 1 of 3 favorite things about the club; participants did not influence family members diet, but influence food purchasing
Lafferty et al. (2006)	Increase consumer knowledge of whole grains	Developed two field trip to the local supermarket: students only and students paired w/ parents	4 th & 5 th graders only (n=25); students paired w/ parents (n=27)	Students only: + Knowledge (P < 0.001) Students paired w/ parents: Identify whole grains + Student (P < 0.01) + Parents (P < 0.003) Knowledge + Parents (P < 0.005)
Thonney and Bisogni (2006)	Develop independent culinary skills while improving diet quality	4 or 6 – 90 minute sessions; 18 small groups	9-15-year-olds n = 128	Increased skills, knowledge and behaviors related to food preparation; inconclusive data
Dougherty and Silver (2007)	Improve diet quality through the use of healthful ingredients and culinary skills	2-hour sessions; 5 consecutive days	8-12-year-olds (n = 31)	+ Level of culinary skills (97%) + Increased enjoyment for cooking (90%) + Increased nutrition knowledge (58%)
Lautenschlager and Smith (2007)	Focused on practical gardening techniques to improve diet quality in reduced-income areas	10-week garden project; Intervention group: gardening, harvesting, cooking, and eating Control group: eating	8-13-year-olds Intervention (n = 26) Control (n = 14)	Focus groups: participants expressed liking to cook with their families using fresh ingredients and an enjoyment for gardening
Wrieden et al. (2007)	Increase cooking confidence and food preparation methods in areas of social deprivation using the CookWell program	8 month long project: T1 = baseline, T2 = week 9, T3 = final dietary assessment for main project; interviews, cooking skills questionnaire, food diaries, etc.	T1-T2: 29 intervention & 21 comparison T1-T3: 24 intervention & 17 comparison	Significant difference (p = 0.047) in fruit consumption from T1 to T2, significant increase in the intervention group for following a recipe, increased confidence for cooking from basic ingredients

*Fruits and vegetables (F&V)

Summary: Need for a Culinary Intervention

The “Pink Chefs” culinary program was a research project designed to utilize cooking classes to increase confidence for menu planning, food purchasing and meal preparation, as well as reintroduce the link between diet and health. Though altering eating behavior may not occur during a cooking intervention, a pilot study may be a solid starting point for initiating dietary changes (Wrieden et al., 2007).

As suggested by Guthrie et al. (1999), this enrichment program was designed to promote dietary change through knowledge and skills; translate and simplify the Food Guide Pyramid and the Nutrition Facts Labels; and create a supportive environment, increase positive attitudes towards healthful eating, and develop effective promotional strategies. Cooking skills are important because they teach teamwork, patience, math skills, while fostering creativity (Lautenschlager and Smith, 2007). In addition, an after school program may have the potential to reduce childhood obesity (von Hippel, Powell, Downey and Rowland, 2007).

This study was designed to investigate the effectiveness of practical cooking classes on overall diet quality. The cooking skills classes were created to increase the students’ confidence for cooking with the intention of improving diet quality. The following hypotheses were examined to measure the impact and effectiveness of a culinary intervention in a community setting.

Hypothesis #1: Self-efficacy for cooking, as measured by subjects' perceived confidence for using basic culinary skills, would improve among middle school girls aged 12 to 14-years by attending a six-week culinary enrichment program based on the Social Cognitive Theory.

Hypothesis #2: Correct responses to knowledge-based questions about the Food Guide Pyramid, as measured by the subjects' responses, would increase among middle school girls aged 12 to 14-years by attending a six-week culinary enrichment program based on the Social Cognitive Theory.

Hypothesis #3: The proportion of students who perceived cooking a meal takes too much time and effort, as a barrier measured by the subjects' responses, would decrease among middle school girls aged 12 to 14-years by attending a six-week culinary enrichment program based on the Social Cognitive Theory.

Hypothesis #4: Middle school girls aged 12 to 14-years attending a six-week culinary enrichment program based on the Social Cognitive Theory would improve the subjects' overall diet by decreasing the percent of fat consumed as part of total daily caloric intake into the optimal range as recommended by the U.S. Dietary Reference Intakes as measured by the subjects' diet recall from the Fat Screener.

Hypothesis #5: Middle school girls 12 to 14-years-old who attended 9 out of 12 sessions ($\geq 75\%$) of a six-week culinary enrichment program based on the Social Cognitive Theory would show a greater difference of correct responses to knowledge-based questions about the USDA Food Guide Pyramid compared to participants who attended less than 9 sessions ($< 75\%$).

CHAPTER 3

Methods and Materials

The goals of the “Pink Chefs” program were to design and test a culinary pilot that used the social cognitive theory as a theoretical framework for increasing the subjects’ self-efficacy for cooking and cooking healthfully; to provide a fun and safe environment conducive for cooperative learning; to build knowledge, skills and confidence for healthful dietary practices; and to encourage youth to eat healthfully. The “Pink Chefs” enrichment program was developed in a collaborative effort between California Polytechnic State University’s (Cal Poly) Kinesiology Department and Food Science and Nutrition Department; the Food Bank Coalition of San Luis Obispo County (Food Bank); Arroyo Grande Community Hospital; Oceano Community Center, Inc.; Lucia Mar School District; YMCA’s Bright Futures After School Program; and other local community organizations to address childhood obesity and poor diet in San Luis Obispo County.

The target population chosen for this program was 12 to 14-year-old middle school girls from reduced-income, Hispanic or Latino communities, due to their increased prevalence of obesity in this population. Youths experience greater long-term weight loss and maintenance than adults (Rinderknecht and Smith, 2004). Therefore, this age group was targeted because early nutrition intervention could establish healthful eating habits well into adulthood (Lautenschlager and Smith, 2007). In addition, teenage girls were chosen because of their potential influence on family food choices with food purchasing and meal preparation in their homes (Hyland et al., 2006).

In partial fulfillment of a Master's degree, the pilot program was developed and tested by the Program Manager (PM). The PM collected and entered all data and was the author of this thesis. Additionally, the PM performed all functions necessary for the implementation of the project: coordinated the program with local organizations, businesses, and Cal Poly volunteer representatives; obtained all groceries for the cooking practicum; developed the lesson plan manual; and instructed all sessions as the Nutrition Educator. PM training consisted of having a foundation in nutrition and culinary skills, as well as participating in the development of the program.

Development of the Culinary Program

To establish a successful culinary program for adolescents' ages 12 to 14 years, a thorough literature search was conducted using Cal Poly's extensive network of databases (Pub Med, Agricola, Science Direct) to determine the methods and effectiveness of culinary programs published between 1979 and 2008. The reference sections were also used to find published articles cited by other authors. The following criteria were considered during the review:

- 1) population of interest (age, gender, ethnicity);
- 2) location;
- 3) feasibility of the practical cooking classes;
- 4) duration of the program;
- 5) length of the cooking sessions;
- 6) instruments used to measure the program's effectiveness;
- 7) and lesson content.

Based on these criteria, a six-week duration of the program was decided upon considering all practical issues. The program was to be conducted over a six-week term and include two instructional periods per week, for a total of 12 sessions. The instructional period was designed to be two hours long and consist of a 30-minute lecture and a 90-minute cooking practicum. The duration of the program and instructional length balanced a minimal amount of time to establish competency with a maximal amount of attention span time tolerated by this age group.

Institutional Review Board Protocol

As this culinary program was based on the participation of human subjects to measure the study's effectiveness, the Institutional Review Board (IRB) at Cal Poly had to approve all consent, testing and advertising materials. In fulfillment of the IRB requirements, the following materials were submitted:

- A. a pre- and post-questionnaire (English only) designed to measure the subjects' self-efficacy for cooking, perceived barriers, and nutrition related knowledge, as well as dietary foods used for prediction of total fat and fiber intake;
- B. an informed consent form available in both English and Spanish describing potential benefits, risks and hazards associated with the program, in the format set forth by the Institutional Review Board;
- C. an advertisement for participant recruitment in both English and Spanish;
- D. and a preliminary overview of the lesson plans.

The use of the social cognitive theory as a theoretical framework generated information to be used to develop a survey to analyze the impact of the culinary study.

The pre- and post-questionnaires for this program were developed using previously

validated assessment tools. The United Kingdom (UK) Food Standards Agency's CookWell program's survey instrument was used to measure self-efficacy for various cooking skills, current cooking practices, knowledge-based questions related to nutrition, and demographic details (Food Standards Agency, 2005). The Nutrition Quest's Screeners for Fruit-Vegetable-Fiber and Fat (previously validated) were used to assess both dietary fiber and fat (Block et al., 1990). The Nutrition Quest's screeners were selected from a larger food frequency questionnaire, which analyzed overall dietary intake. The screeners were specific for determining grams of fiber and percent fat of total daily caloric intake. Food items for the screeners were selected from the National Health and Examination Surveys, individual food consumption data, which represented the majority of fiber and percent fat consumption of the American diet.

From these previously validated questionnaires, the appropriate construct items were chosen for this target population. A knowledge needs assessment was conducted by observing and interviewing students at Laguna Middle School during the cooking portion of a home economics class. Various questions pertaining to the cooking class were asked: "what foods do you like to prepare;" "what cooking skills do you want to learn;" "what is your favorite thing about the class." Questionnaire items were selected to evaluate youths' self-efficacy (confidence) for cooking, outcome expectations (anticipated outcomes from engaging in a health related behavior), social outcomes (the social consequences of the behavior), behavioral capabilities (knowledge and skills to perform a given behavior), and barriers (Contento, 2007). (See Figure 3.1 for sample questions). (See Appendix A for the entire copy of the pre- and post-questionnaires).

Constructs	Questions
Self-efficacy	How confident do you feel about: being able to cook using basic ingredients, “from scratch?” using a knife safely when cooking? following a simple recipe?
Outcome Expectations	Do you think you will increase the amount of fruit and vegetables you eat in the next 6-12 months?
Social Outcomes	I think cooking for my family is cool. Most kids my age think that cooking for the family is cool.
Behavioral Capability	How many fruits and vegetables do health experts recommend eating every day? Which source of whole grain is the healthiest for you? Which beverage is healthiest for you?
Barriers	Cooking a meal takes too much time and effort. Cooking a meal can be expensive, eating out saves money.

Figure 3.1: Sample questions for pre- and post-questionnaires based on the Social Cognitive Theory constructs.

The informed consent form was developed using the IRB guidelines as a template. The consent form discussed the potential risks and benefits associated with participation in this study. (See Appendix B for both the English and Spanish version).

A graduate student from Cal Poly College of Agriculture, Food and Environmental Sciences from the Department of Food Science and Nutrition created the flier for soliciting participants from the middle schools. The circular included information, such as where and when the orientation meeting would be held, dates of the program, the incentives, a brief description of the culinary program, that the classes were free and listed sponsors. (See Appendix C for both English and Spanish versions).

The consent form and advertisements were produced in both English and Spanish. An undergraduate student from Cal Poly College of Liberal Arts from the Modern Languages and Literatures Department completed the translation of these documents as part of a Senior Project (MLL 460) and were reviewed by the Senior Project Advisor for

accuracy. The undergraduate student continued involvement with the program as the Spanish translator.

Lesson Content and Development

The idea behind each lesson was to discuss basic nutrition while building culinary skills. Various cooking skills and nutrition topics were to be introduced and developed during the program and were as follows: knife skills, building balanced meals, understanding Nutrition Facts Panels on food labels, and understanding portion sizes. Many resources were explored in the creation of the culinary program: kidshealth.org (Nemours Foundation, 2009), mypyramid.gov (USDA, 2009), the Food Network (2009), Oregon State University Extension Services (2008), and Meals Matter (2009). Every week centered around a main focal point and each lesson focused on a particular nutritional and cooking skill component. (See Figure 3.2).

Week	Weekly Title	Weekly Description
1	Introduction/The Importance of Cooking	Short introduction about the course, the expectations and creating the classroom guidelines. Administer the questionnaire; food safety techniques (proper hand washing); safety rules in the kitchen (proper knife use and storage, extinguishing a kitchen fire, the use of oven mitts).
2	Food Labels/MyPyramid for Kids	How to read a food label; portion sizes of fruits, vegetables, whole grains, balancing a meal, washing of produce.
3	Macronutrients	Protein, carbohydrates, and fats, how the body uses these nutrients, cross-contamination of meals and non-meat items.
4	Breakfast/Eating on the Go/Calcium	Importance of breakfast, easy to make recipes for eating on the go, how calcium affects our bodies, ways to increase calcium consumption.
5	Menu Planning/M Meal Budgeting	How to stretch a budget, clipping coupons, using web-based resources to create a meal.
6	Kids Creation	Nutrition Jeopardy game to review material throughout the program; cook a meal for the participants families, administer the post-questionnaire, party for friends and family to allow the participants to showcase all the skills learned throughout the program.

Figure 3.2: Initial version of the chronological description of weekly lessons (submitted to IRB).

The program manual was designed for future implementation to be used by community members, who might have minimal or no nutrition or education background. The instructional period was to begin with a discussion in which the daily topic and purpose was introduced and a cooking period containing a recipe reflecting the day's goal. (See Figure 3.3). (Refer to Appendix F for a complete version of the lesson plans).

Lesson Name	Goals
Personality Pie	The orientation to the “Pink Chefs” program by establishing the classroom norms, creating the culinary community, and introducing nutrition through cooking skills.
How to Read a Recipe	To become familiar with reading and following a recipe, to correctly identify measurement tools, and to execute a recipe while working in groups.
Cutting Edge	To establish the proper use and storage of a knife.
Build Your Pyramid	To build a pyramid for healthy eating with an emphasis on balance among food groups while discussing the link between eating habits and physical & mental health.
Get the Facts!	To read nutrition facts label and make comparisons between two similar food items.
Carbohydrates & Protein	To identify that carbohydrates and proteins are two of the three energy sources; the difference between simple & complex, refined & unrefined, and whole carbohydrates; difference between complete, incomplete & complementary proteins.
What are Fats?	To identify the difference between cholesterol, saturated and unsaturated fats; fats and oils in a recipe can be substituted with using less caloric, more nutrient dense ingredients.
Calcium	To determine the nutrition benefits of calcium for strong bones and the comparison of different milk products using nutrition facts labels.
Breakfast of Champions!	To identify the physiological, cognitive, and nutritional benefits of eating breakfast.
Meal Planning & Budgeting	To plan, purchase, and create a meal on a budget.
Nutrition Jeopardy	To review the cumulative nutrition information throughout the course.
Family Fiesta	To cater an event for their families by working together to assemble a meal using menu planning and time management.

Figure 3.3: Developed lessons and goals for the “Pink Chefs” 6-week after school culinary and nutrition program.

Establishment of a Community Network

The support of local agencies would help sustain the program for future implementation. As a community program, one requirement was to establish a network with local organizations and businesses in a collaborative effort to combat childhood obesity. The Oceano Wellness Committee included several community representatives that discussed and responded to community issues through the development of community-based programs. The Oceano Wellness Committee included representatives of Cal Poly, the Lucia Mar School District, Latino Outreach Council, Arroyo Grande Community Hospital, Central Coast Community Health Centers and the Oceano Community Center, Inc., plus concerned private citizens. The Oceano Wellness Committee had already identified the problems and goals in this reduced socio-economic community. Oceano, with its new and under-utilized community center facility, was identified as a potential location for intervention programs.

Arroyo Grande (AG) was the second site selected for the implementation of the program, as designated by the Oceano Wellness Committee. The Director of the County YMCA expressed strong support for this culinary program. The YMCA's Bright Futures After School Program partnered with the emerging COPE organization to offer this program to students at Mesa Middle School. The Director for the emerging COPE organization negotiated all of the legalities with Cal Poly, Oceano and the YMCA.

Donations and Funding

In order to pilot this culinary project, funding sources and donations were necessary to obtain supplies and materials. The Cal Poly Kinesiology Department, responsible for initiating and coordinating the development of the emerging Center for

Obesity Prevention and Education (COPE), was the primary funding source. This pilot project also established the emerging COPE organization as a professionally run, non-profit organization.

The Food Bank, a non-profit organization, agreed to donate food items for the entirety of the program. A site visit to the Food Bank was conducted to determine foods available for the program. The Site Manager in southern San Luis Obispo County gave a guided tour of the facility.

A formal letter and a program flier were created to advertise the culinary program and offer helpful suggestions for donations. The letter and flier were individually delivered to local businesses requesting support. (See Figure 3.4 for additional organizations and businesses that joined in the support of this culinary program). After speaking to a General/Store Manager from various businesses (local supermarkets, kitchen appliance stores, and office supply stores), a business card was requested by the PM for follow-up contacts and future donation requests. Shortly after receiving a donation, the Administrative Support in the emerging COPE office would mail a formal thank you letter with a tax deductible identification number (encouragement to businesses to support).

Organization or Business	Donated Items
Best Buy™	Kitchen Aid™
Kitchen Collection™	Blender
Wal-Mart™	Cooking supplies
Staples™	\$125
Trader Joe's™	\$65
Albertsons™	\$50

Figure 3.4: Local organizations and businesses in support of the pilot programs through solicitation.

Locations for the Pilot Programs

Two pilot projects were scheduled in neighboring reduced-income communities. The Oceano Community Center, Inc., located in Oceano, was the first facility chosen for the pilot study. For the purpose of this thesis, this location will be termed as ‘Oceano.’ The facility was rented at a reduced rate for three-hour time increments for each semiweekly session, allowing enough time for program set-up, implementation, and clean up. At this time, an influential community mom (a well-known mom who has developed a rapport with the community) was identified by Oceano and hired to aid in the preparation and instruction of the cooking classes. Upon contacting the administrative support at the community center, a site visit was scheduled before the start of the program to assess the facility and determine equipment needs. During the visit, the kitchen, the computer room, and the lecture room were toured. The kitchen had a lockable storage closet, two industrial-sized refrigerators, one industrial-sized freezer, one six-burner stovetop with oven, one hand washing sink, two dishwashing stations, two large food preparation areas, and two non-slip floor mats. The computer room had three functional computers with internet access. The lecture room had large tables with chairs and an ethernet port. All of these amenities were available for use by the “Pink Chefs” program.

The second location was held at Mesa Middle School, a public school in Arroyo Grande, in cooperation with the YMCA’s Bright Futures After School Program. For the purpose of this report, this site will be referred to as ‘AG.’ The Director of the emerging COPE organization arranged the contract. A two-hour time interval per session was reserved for access to the school’s industrial kitchen. After contacting the Site Director for the Bright Futures After School Program, a site visit to the middle school was

scheduled and all resources were assessed and noted. A private refrigerator/freezer was obtained and a kitchen staff member (lunch mom) was hired, both supplied by SLO County YMCA. The kitchen had a large preparation area located in the center, a stove with a six-burner range top, a convection oven, one dishwashing station, and two floor mats. The school library had multiple computers for Internet use. The lecture room was a standard classroom. Additionally, a Bright Futures After School Program storage shed was available for storing “Pink Chefs” materials and supplies.

Times for the Pilot Project in Oceano

As part of the pilot feasibility process two school counselors, one each from Judkins and Paulding Middle Schools in the Lucia Mar School District, agreed to set up a meeting with middle school students to determine viable days and times to conduct “Pink Chefs” in Oceano. The goal was to limit scheduling conflicts with other after school activities and ensure the greatest possible attendance for “Pink Chefs.” The school counselors suggested one day of the program during the week and the other day on the weekend. The overall consensus was Thursday evenings from 5:30 to 7:30 pm and Saturday afternoons from noon until 2:00 pm.

Due to prior engagements, only one student was available to attend the pre-program interview. During the interview, questions were asked regarding health and cooking. Questions included: “do you like to cook;” “what kind of foods do you like to cook;” “what does healthy mean to you?” The one student expressed an affinity for baking and wanted to bake cookies, cakes, and brownies during the class. When asked, the student was unable to explain the meaning of the term ‘healthy.’

In order to recruit participants, fliers were posted at local businesses located in Oceano. For additional recruitment and piloting of the questionnaire, a family counselor from the Oceano Family Community Center was contacted as referred by the school counselors. The pilot of the questionnaire was scheduled the day before the orientation meeting. This occurred at the Oceano Family Community Center after school. Three students were contacted to meet for the survey questionnaire; however, only one student attended. Changes to the questionnaire were not made prior to the beginning of the program, but definitions of healthy, confidence, and convenience were explained to the participants during the administration of both the pre- and post-questionnaires for clarification based on the pre-piloting.

The orientation meeting was held two days prior to the beginning of the “Pink Chefs” Program for interested students accompanied by their guardian. The overviews of the study and consent form were discussed during the meeting. The undergraduate student from Cal Poly, hired as the Spanish translator, was scheduled to attend. The flier for participant recruitment explicitly stated that youths needed to be accompanied by a guardian during the orientation meeting; however, only two parents attended the orientation meeting in Oceano and were asked to complete the informed consent form. All students who wanted to participate returned the consent form, signed by a guardian, on the first day of the program.

Times for the Pilot Project in Arroyo Grande

To assess the practicality of the pilot program, a meeting with the Site Director was held to determine the schedule of the AG program. This program was scheduled on Wednesdays and Fridays from 2:30 to 4:30 pm. The middle school provided a school bus

for transportation home at 4:30 pm. During this time, the Site Director received promotional fliers for the recruitment of students. An orientation meeting was conducted at the school two days before the start date to discuss the purpose and goals of the study. Parental material, the consent form, and the recruitment flier, was translated into both English and Spanish for primarily Spanish speaking families. Both forms were sent home with the potential participants to acquire guardian consent.

Pilot Project Preparation

At both locations, all of the materials and supplies were brought and stored at the site in preparation for the program. Items purchased for the program included cleaning supplies (hand soap, dish soap, gloves, sponges, anti-bacterial counter cleaner, paper towels), garbage bags, clothing detergent, aprons and hats, dish towels, to-go containers (tin foil, plastic wrap, reusable plastic containers, zip-lock bags), pots, sauté pans, knives, cooking utensils, pot holders, and plastic tubs for storage of all items. A broom, dustpan, and mop with bucket completed the cleaning kit available at each site.

The start dates of the programs were staggered; Oceano started two weeks before AG. For both programs, the local fire departments were contacted and scheduled to present. The majority of the food for the pilot study was donated by the Food Bank Coalition of San Luis Obispo County. Other food items not available by the Food Bank were purchased at local grocers.

Volunteer Recruitment

During Spring Quarter 2008, students from Cal Poly were recruited to partner with this culinary study. A flier was created to circulate the Food Science and Nutrition

Department (FSN). This advertisement stated the purpose and description of the study, various jobs, and the time and place for the informational meeting.

The program was introduced during the informational meeting. Students were given the opportunity to sign up for the days best suited for their schedules. The sign-up sheet contained three slots per day, as three volunteers were desired per session. The students were provided with a master calendar along with a list of requirements: dress code, responsibilities, and proper procedure for canceling. A contact list was provided for all volunteers preceding the informational meeting. At this time, the Director of the emerging COPE organization hired a student assistant for the Project Manager.

“Pink Chefs” Pilot Study

In the spring of 2008, IRB approval was granted for the duration of one year to implement the pilot of the “Pink Chefs” culinary program. The main objective of this study was to teach nutrition through basic cooking skills to youths 12 to 14-years-old. The IRB approval required the submission of the following forms. (See Appendix A through C for all documents).

1) Pre-questionnaire	Appendix A
2) Post-questionnaire	Appendix A
3) English Informed Consent form	Appendix B
4) Spanish Informed Consent form	Appendix B
5) English Promotional Flier	Appendix C
6) Spanish Promotional Flier	Appendix C

Participants

The population of the pilot study consisted of 12 to 14-year-old middle school girls who lived in south San Luis Obispo County. Subjects were enrolled based on convenience sampling. Recruitment for Oceano took place at Judkins and Paulding

Middle Schools, through the Oceano Family Community Center, local businesses and word of mouth. Recruitment for AG took place at Mesa Middle School by the Site Director of the Bright Futures After School Program.

After completion of the orientation meetings, 29 subjects self-selected to participate in the program. Altogether, there were six 12-year-olds, fifteen 13-year-olds, seven 14-year-olds, and one of unknown age. The “Pink Chefs” is a girls’ culinary program; therefore, one hundred percent of the participants were female.

Study Design in Oceano

The design of the study included the participation of 12 to 14-year-old girls who attended Judkins and Paulding Middle Schools (public schools within the Lucia Mar School District) and lived in the Oceano community or were able to be transported to and from the site. If the participant was unable to attend the first class for the administration of the pre-questionnaire, efforts were made to re-schedule a meeting at the Oceano Family Community Center before the second session. Three students were contacted to meet the day before the second class to complete the pre-questionnaire.

Volunteers were provided with a detailed e-mail explaining their responsibilities one week prior to program implementation. Job descriptions included tasks such as: setting up the kitchen; food preparation (if necessary); and during class time, organization of the supplies for easy accessibility and supervision of the participants. The proportion of adults to youths was one to three. This proportion seemed to work best in this kitchen facility, otherwise the kitchen might become overcrowded.

Thirty minutes in advance of each class, the site was prepared by the PM, the Spanish Translator, and the college volunteers. Each session followed the same general

plan. At the beginning of the first cooking session, the informed consent forms were collected from all of the subjects. Participants were instructed to select a seat where the following materials were situated: a blank piece of paper for a class activity, a pencil, and a nametag. Participants were given a healthy snack and beverage during the lecture portion of the class. Following the 30-minute lecture portion, students were instructed to clean the classroom before relocating to the kitchen for the practicum.

During the cooking practicum, each student was assigned to one of five workstations, in teams of two or three depending on that day's attendance. Each workstation had a posted recipe of the day, an assigned cleaning responsibility, cutting boards with non-slip liners, a knife and mixing bowls. A separate workstation contained all of the ingredients needed for the recipe, which was organized so all the participants were able to measure the ingredients and bring it back to their work station. Before the participants began to create the recipe, the PM would demonstrate the new cooking skills (approximately 10 minutes to demonstrate). At which point, the students were then instructed to thoroughly read the recipe and gather all of the necessary ingredients. Each participant was observed by the PM demonstrating each cooking skill at each practical session.

Following completion of the recipe, the participants would then engage in their assigned clean up responsibility. These tasks included: washing and drying dishes; cleaning all of the countertops, the ingredient workstation and the demonstration table; sweeping and mopping the floors; and taking out the trash and recycling. These responsibilities were rotated each session. While the participants were cleaning, the volunteers divided the prepared food and placed equal portions into reusable plastic

containers. Each participant would bring the prepared recipe home to their families and were asked about their families' like or dislike during the following class session. Each student was instructed to bring the container back for reuse.

At the end of each session, the PM checked the kitchen for any mess that may have been overlooked. Additionally, the PM gathered any supplies remaining in the lecture room. Finally, the post-lesson review was written by the PM, which included what worked, what did not work, and modifications to be made. The written report took approximately 30-minutes to complete.

Study Design in Arroyo Grande

Two Cal Poly Nutrition Educators implemented the study. One educator was the Program Manager (PM, primary instructor) and the other educator was the Program Assistant (PA), an undergraduate student from Cal Poly College of Agriculture, Food and Environmental Sciences from the Food Science and Nutrition Department. Requirements for the Program Assistant/Nutrition Educator position consisted of having a foundation in nutrition and work experience with community nutrition education and children. The PA position consisted of creating educational handouts, attending all culinary classes, management of volunteers and general program support.

Since the AG program began two weeks after Oceano's, improvements and revisions were made to the initial lesson plans. (See Figure 3.5). A lesson specifically instructing the students on how to read a recipe was added into the beginning of the AG program. Also, the "Family Fiesta" event was moved from the middle of the program to the end as the finale.

Oceano			AG		
<i>Lesson</i>	<i>Cooking Skills</i>	<i>Recipe</i>	<i>Lesson</i>	<i>Cooking Skills</i>	<i>Recipe</i>
Introduction	Pie decorating	Personality Pie	Introduction	Pie decorating	Personality Pie
Cutting Edge	Dice, slice, chop	Couscous Salad	How to Read a Recipe	Read a recipe, measurement terms and application, baking	Berry Tasty Muffins
My Pyramid	Repeat dice, slice, chop	Chicken Salad Sandwich	Cutting Edge	Dice, slice, chop	Couscous Salad
Get the Facts!	Mince, finely dice, sauté; repeat dice and chop	Soft Tacos with Black Beans and Holy Guacamole	My Pyramid	Repeat dice, slice, chop	Chicken Salad Sandwich
Carbohydrates and Protein	Mince, sauté, dice, using a thickening agent	Vegetable Tofu Stir-fry with Quinoa	Get the Facts!	Mince, finely dice, sauté; repeat dice and chop	Soft Tacos with Black Beans and Holy Guacamole
Fats	Dice, measuring dry ingredients, packing brown sugar	Oatmeal Chocolate Chip Apple Cookies with Flaxseed	Carbohydrates and Protein	Mince, sauté, dice, using a thickening agent	Vegetable Tofu Stir-fry with Quinoa
Calcium	Al dente, a roux, grate nutmeg, mince, chop	4-cheese Macaroni and Cheese	Fats	Dice, measuring dry ingredients, packing brown sugar	Oatmeal Chocolate Chip Apple Cookies with Flaxseed
Family Fiesta Day 1	Dish assembly	Chicken Enchiladas	Calcium	Al dente, a roux, grate nutmeg, mince, chop	4-cheese Macaroni and Cheese
Family Fiesta	Meal assembly	Vegetable Platter, Fruit Salad, El Torito's Salsa, Holy Guacamole	Breakfast of Champions	Blend, sauté, bake, chop, measure	Apple Coffee Cake, Breakfast No-Bake Granola Bars, Silken Smoothies
Breakfast of Champions	Blend, sauté, bake, chop, measure	Apple Coffee Cake, Breakfast No-Bake Granola Bars, Silken Smoothies	Meal Planning and Budgeting	Stretching a meal using beans and water, sauté	Easy Skillet Chili
Meal Planning and Budgeting	Stretching a meal using beans and water, sauté	Easy Skillet Chili	Nutrition Jeopardy	Dish assembly	Meat and Vegetarian Lasagna
Nutrition Jeopardy	Baking pizza dough	Pizza Contest	Family Fiesta	Meal assembly	Romaine Salad, Vegetable Platter, Fruit Salad, Garlic Cheese Bread

Figure 3.5: Implementation differences in lesson plans between Oceano and AG. **Blue** indicates the addition of a lesson; **red** indicates combining the lessons into one.

The design of the study included the self-selection of 12 to 14-year-old girls who attended Mesa Middle School and were enrolled in the Bright Futures After School Program. Consent forms completed by the guardian were required to be on file with the PM before a child was allowed to participate in the class. If any participant was unable to attend the first class and participate in the administration of the pre-questionnaire, efforts were made by the Site Director of the Bright Futures After School Program to implement the questionnaire before the next lesson. Five students met with the Site Director prior to the second session to complete the pre-questionnaire.

By default, the size of the kitchen determined the class size. The AG kitchen facility was much smaller than the Oceano facility. The space was large enough to comfortably fit ten students. Due to the size of this kitchen facility, only two students could work safely at the stove. For every group, participants were rotated weekly to learn the sauté skill since all the students were unable to practice the skill in one day.

The kitchen staff members, along with the college volunteers, were given daily instructions for each lesson 30 minutes before class started. These included the set-up of the workstations and any food preparation for the daily recipe. Once the preparation was complete, the kitchen aides would assist the participants as needed. Following completion of the recipe, each day the kitchen staff would portion out the food into plastic containers for the participants to take home. All of the materials, supplies and food were then transported back to the storage unit and private refrigerator.

Program Completion

Upon completion of both programs, all the materials, supplies, and non-perishable food items were consolidated and transported back to Cal Poly for storage. On the day after the “Family Fiesta,” post-study questionnaires were administered to participants and followed by a focus group session in order to better understand the girls’ perceptions regarding the program’s strengths, weaknesses, and effectiveness. At this time, participants received a “Pink Chefs” program T-shirt and a recipe book, created by the PM, which included a collection of recipes used in the program and a collage of class photos.

Data Coding

The PM implemented data collection at both locations. Coding and data entry was completed by the PM. All data was entered into individual Microsoft Excel spreadsheets. The database included: personal information, pre-questionnaire, and post-questionnaire.

Upon completion of the pre-questionnaire, each participant was assigned a unique code from one to 29. Of the original 29 participants, 22 subjects completed the post-questionnaire. Only those who completed both the pre- and post- questionnaires were included in the data analysis.

A self-efficacy scale was created by summing responses to seven questions pertaining to the students’ confidence level for various cooking skills. The response variable (self-efficacy scale) varied depending on the explanatory variable (skill). All the self-efficacy construct questions used a 5-level Likert scale from 1 (not at all confident), 3 (confident), to 5 (extremely confident). By adding the students’ responses for all seven

questions, the self-efficacy scale variable became an ordinal scale ranging from a low of 7 (not at all confident), to 21 (confident), to a high of 35 (extremely confident).

This study also measured changes in knowledge based on five nutrition-related questions. These questions were dichotomous and had either a correct or incorrect response. The correct response was coded as 1 and the incorrect response was coded as 0. Therefore knowledge was measured on a scale of 0 to 5, with 0 meaning no correct responses and 5 meaning all five correct responses.

Questions pertaining to barriers were formatted with four suggested choices of barriers as well as an open-ended 'other' category. In total, there were five questions addressing barriers to cooking. Each response was either marked or not marked. A marked response was coded as 1 and an unmarked response was coded as 0. Each barrier question was analyzed separately, instead of creating an overall perceived barrier scale to measure change post-intervention.

The Nutrition Quest's previously validated Fat Screener assessment tool was used to calculate the consumption of percent fat from total daily caloric intake. Students were instructed to mark one box per line for the consumption frequency of 17 different meat and snack items: 1 time per month or less, 2-3 times a month, 1-2 times a week, 3-4 times a week, and 5+ times per week. Subjects' responses were entered into the online Nutrition Quest (www.nutritionquest.com) website, which calculated the results and gave the results as one of four categories based on the percentage of total caloric intake from fat: < 30%; 30-34.9%; 35-39.9%; and 40-50%. These categories were coded as one through four, respectively. Therefore category 2 was hypothesized to be the referent goal category representing participants with 30% of their calories coming from fat.

The subjects' correct responses to knowledge-based questions pertaining to nutrition were categorized by varying attendance levels. Attendance level was based on a 75 percent attendance rate recommended by Resnicow et al. (2000), then categorized into two groups: "high attendance" (participants who attended ≥ 75 percent of the sessions) and "low attendance" (participants who attended < 75 percent of the sessions).

Statistical Analysis

Statistical analysis was performed using two software programs: Minitab 15 (Minitab Inc., 2006) and R 2.6.2 (R Development Core Team, 2008). Analysis was only performed on participants who completed both pre- and post-questionnaires. Bonferroni's adjustment method was used for all analyses as a way to control the likelihood of committing a Type 1 error (the intervention caused a difference in the outcome when in fact there was no change).

Before analyses, assumptions for the paired-sample t-tests were checked for violations. Tests of normality were done for each variable. Within the dataset, variables for two hypotheses were normally distributed; therefore, parametric tests were used. Since variables relating to the other three hypotheses had violations of normality, appropriate non-parametric tests were used.

Hypothesis #1: Self-efficacy for cooking, as measured by subjects' perceived confidence for using basic culinary skills, would improve among middle school girls aged 12 to 14-years by attending a six-week culinary enrichment program based on the Social Cognitive Theory.

This hypothesis was investigated using a paired t-test. This procedure compared two sets of means: post- minus pre-intervention. An upper tailed test was performed.

Hypothesis #2: Correct responses to knowledge-based questions about the Food Guide Pyramid, as measured by the subjects' responses, would increase among middle school girls aged 12 to 14-years by attending a six-week culinary enrichment program based on the Social Cognitive Theory.

The normality assumption for the paired t-test was violated. Therefore, the Wilcoxon's Sign-Rank test, a non-parametric alternative to a paired t-test, was used to determine whether a significant difference existed between the number of correct responses to knowledge-based questions post- minus pre-intervention. This test was performed using an upper tail procedure.

Hypothesis #3: The proportion of students who perceived cooking a meal takes too much time and effort, as a barrier measured by the subjects' responses, would decrease among middle school girls aged 12 to 14-years by attending a six-week culinary enrichment program based on the Social Cognitive Theory.

To investigate this hypothesis, McNemar's test was used. McNemar's test is a method applied to a two-by-two contingency table consisting of two dichotomous factors, such as pre and post and yes or no. The only assumption for this test was that the variables are "dichotomies which are mutually exclusive and exhaustive" (Garson, 2008), or simply that the pairs are matched. McNemar's test is used to determine if there is a significant difference between correlated proportions. A lower tailed test was performed.

Hypothesis #4: Middle school girls aged 12 to 14-years attending a six-week culinary enrichment program based on the Social Cognitive Theory would improve the subjects' overall diet by decreasing the percent of fat consumed as part of total daily caloric intake

into the optimal range as recommended by the U.S. Dietary Reference Intakes as measured by the subjects' diet recall from the Fat Screener.

To investigate this hypothesis, McNemar's test was performed.

Hypothesis #5: Middle school girls 12 to 14-years-old who attended at least 9 out of 12 sessions ($\geq 75\%$) of a six-week culinary enrichment program based on the Social Cognitive Theory would show a greater difference of correct responses to knowledge-based questions about the USDA Food Guide Pyramid compared to participants who attended less than 9 sessions ($< 75\%$).

The data was investigated using paired t-test. "Low attendance" ($< 75\%$) was excluded and "high attendance" ($\geq 75\%$) was analyzed ($n=16$). An upper tailed test was conducted.

Chapter 4

Results

Baseline Characteristics

Inclusion criteria for selecting the population included middle school girls from seventh and eighth grades who could provide their own transportation to and from the Oceano Community Center, Inc. and Mesa Middle School. All students who attended both orientation meetings were potential participants contingent upon returning the consent form signed by a guardian. All subjects returned signed informed consent.

The results from the culinary intervention were derived from the mean difference between pre- and post-intervention questionnaires. Baseline characteristics (of the convenience sampling) were determined (see Table 4.1): the subject's ethnicity, gender, age, school, grade, and any dietary restrictions. Both the Oceano and AG groups were similar in that the participants were primarily of Hispanic or Latino ethnicity (77%) and had a mean age of 12.95 (± 0.129). The attrition rate for Oceano was 35 percent (six students) compared to eight percent (one student) from AG. The Oceano participants dropped out of the program due to family functions, weddings, quinceañeras, and sports that conflicted with the Saturday classes. The one subject from AG left school early for summer vacation.

A comparison was made between those who completed and those who did not complete the intervention. The subject characteristics of those who did not complete the program were 21 percent (6) Hispanic or Latino and three percent (1) white out of 29 participants. Of these seven students, two were 12-years-old, one was 13-years-old, and four were 14-years-old. Those who did not complete the intervention had an average

attendance rate of 42 percent (5 classes) compared to 75 percent (9 classes) for the participants who completed the program.

Table 4.1: “Pink Chefs” demographics at baseline and after attrition in the combined sample (n = 29) as well as per location: Oceano (n = 17), AG (n = 12)

Baseline			
	Combined Sample (n=29) % (n)	Oceano Sample (n=17) % (n)	AG Sample (n=12) % (n)
Ethnicity	White: 10% (3) Hispanic/Latino: 80% (23) Multiracial: 10% (3)	12% (2) 82% (14) 6% (1)	8% (1) 75% (9) 17% (2)
Gender	Female: 100% (29) Male: 0%	100% (17) 0%	100% (12) 0%
Age	12: 21% (6) 13: 52% (15) 14: 24% (7) Non-specific: 3% (1)	24% (4) 41% (7) 29% (5) 6% (1)	16.5% (2) 67% (8) 16.5% (2)
School	—	Judkins: 82% (14) Paulding: 18% (3)	Mesa: 100% (12)
Grade	7 th : 34% (10) 8 th : 66% (19)	35% (6) 65% (11)	33% (4) 67% (8)
Dietary Restrictions	—	1 banana allergy	2 lactose intolerant 1 vegetarian
After Attrition			
	Combined Sample (n=22)	Oceano Sample (n=11)	Arroyo Grande Sample (n=11)
Ethnicity	White: 9% (2) Hispanic/Latino: 77% (17) Multiracial: 14% (3)	9% (1) 82% (9) 9% (1)	9% (1) 73% (8) 18% (2)
Gender	Female: 100% (22) Male: 0%	100% (11) 0%	100% (11) 0%
Age	12: 18% (4) 13: 64% (14) 14: 13.5% (3) Non-specific: 4.5% (1)	27% (3) 55% (6) 9% (1) 9% (1)	9% (1) 73% (8) 18% (2)
School	—	Judkins: 73% (8) Paulding: 27% (3)	Mesa: 100% (11)
Grade	7 th : 36% (8) 8 th : 64% (14)	45% (5) 55% (6)	27% (3) 73% (8)
Dietary Restrictions	—	—	2 lactose intolerant 1 vegetarian

Baseline means, standard error and standard deviation were calculated for all of the major constructs. (See Table 4.2). The Oceano group reported a slightly higher mean self-efficacy scale score (24.77 ± 0.79) than the AG group (21.42 ± 2.07). This minor difference may be explained by the participants' reporting an increased percentage for using scratch ingredients for meal preparation. The Oceano group also reported preparing convenience and ready-made meals at a greater frequency than the AG group, although this meal preparation method does not require much skill. Both groups illustrated similar measures, but did not demonstrate any major differences.

Table 4.2: “Pink Chefs” baseline characteristics of the social cognitive theory constructs as mean values with standard error and standard deviation (n = 29).

Social Cognitive Theory Constructs:	Range	Mean ($\pm$ SE) SD		
		Combined (n=29)	Oceano (n=17)	Arroyo Grande (n=12)
Self-efficacy for Cooking	(7-35)	23.379 ($\pm$ 0.999) 5.381	24.765 ($\pm$ 0.788) 3.251	21.42 ($\pm$ 2.07) 7.15
Knowledge	(0-5)	3.345 ($\pm$ 0.200) 1.078	3.471 ($\pm$ 0.212) 0.874	3.167 ($\pm$ 0.386) 1.337
Barriers:	(0-1)			
Too much time & effort;		0.310 ($\pm$ 0.087) 0.471	0.235 ($\pm$ 0.106) 0.437	0.417 ($\pm$ 0.149) 0.515
Too expensive;		0.069 ($\pm$ 0.048) 0.258	0.118 ($\pm$ 0.081) 0.332	0.0 ($\pm$ 0.000) 0.000
Produce goes bad quickly;		0.069 ($\pm$ 0.048) 0.258	0.118 ($\pm$ 0.081) 0.332	0.0 ($\pm$ 0.000) 0.000
Produce is not easy to find in a local market;		0.0345 ($\pm$ 0.035) 0.186	0.059 ($\pm$ 0.059) 0.243	0.0 ($\pm$ 0.000) 0.000
Other.		0.655 ($\pm$ 0.0898) 0.484	0.706 ($\pm$ 0.114) 0.470	0.583 ($\pm$ 0.149) 0.515
Meal Preparation:	(0-1)			
Convenience/ready-made meals;		0.690 ($\pm$ 0.087) 0.471	0.882 ($\pm$ 0.081) 0.332	0.417 ($\pm$ 0.149) 0.515
Ready-made ingredients to complete a meal;		0.724 ($\pm$ 0.085) 0.455	0.706 ($\pm$ 0.114) 0.470	0.750 ($\pm$ 0.131) 0.452
Basic ingredients, scratch;		0.552 ($\pm$ 0.094) 0.507	0.824 ($\pm$ 0.095) 0.393	0.167 ($\pm$ 0.112) 0.389
Don't cook at all;		0.035 ($\pm$ 0.035) 0.186	0.0 ($\pm$ 0.000) 0.000	0.083 ($\pm$ 0.083) 0.289
Other.		0.069 ($\pm$ 0.048) 0.258	0.059 ($\pm$ 0.059) 0.243	0.083 ($\pm$ 0.083) 0.289
*Fiber (g)/day Screener:	(12-39)	18.83 ($\pm$ 1.06) 5.73	20.53 ($\pm$ 1.56) 6.41	16.42 ($\pm$ 1.03) 3.58
*Fat % Screener:	(0-1)			
< 30%		0.172 ($\pm$ 0.071) 0.384	0.118 ($\pm$ 0.081) 0.332	0.250 ($\pm$ 0.131) 0.452
30-34.9%		0.241 ($\pm$ 0.081) 0.436	0.294 ($\pm$ 0.114) 0.470	0.167 ($\pm$ 0.112) 0.389
35-39.9%		0.276 ($\pm$ 0.085) 0.455	0.235 ($\pm$ 0.106) 0.437	0.333 ($\pm$ 0.142) 0.492
40-50%		0.310 ($\pm$ 0.087) 0.471	0.353 ($\pm$ 0.119) 0.493	0.250 ($\pm$ 0.131) 0.452

*Calculated from fat/fiber screeners (Block et al., 1990).

Hypothesis #1: Self-efficacy for cooking, as measured by subjects' perceived confidence for using basic culinary skills, would improve among middle school girls aged 12 to 14-years by attending a six-week culinary enrichment program based on the Social Cognitive Theory.

The culinary intervention demonstrated a positive effect on the students' confidence for cooking. With 21 degrees of freedom, a test statistic equal to 2.80, and corresponding *p*-value equal to 0.005, there was sufficient evidence to conclude that there was a significant increase in the average self-efficacy score for cooking between post- and pre-intervention.

Each of the items used to create the self-efficacy cooking construct was examined separately. (See Table 4.3). Mean differences for each question regarding the students' perceived confidence were calculated. Overall, the Oceano group illustrated a greater change in the participants' perceived confidence for all cooking skill variables, except cooking from basic ingredients did not change from pre- to post-intervention.

Table 4.3: Self-efficacy score for cooking for each of the seven items used to calculate the self-efficacy scale (n = 22).*

Self-efficacy Items		Mean Differences ($\pm$ SE)		
		SD		
How confident do you feel about...	Range of differences	Combined (n=22)	Oceano (n=11)	Arroyo Grande (n=11)
being able to cook from basic ingredients.	(-2,2)	0.182 ($\pm$ 0.243) 1.140	-0.000 ($\pm$ 0.357) 1.183	0.364 ($\pm$ 0.338) 1.120
creating meals using new ingredients.	(-2,3)	0.545 ($\pm$ 0.292) 1.371	0.818 ($\pm$ 0.444) 1.471	0.273 ($\pm$ 0.384) 1.272
following a simple recipe.	(-1,2)	0.409 ($\pm$ 0.170) 0.769	0.636 ($\pm$ 0.279) 0.924	0.182 ($\pm$ 0.182) 0.603
using a knife safely when cooking.	(-1,4)	0.364 ($\pm$ 0.251) 1.177	0.727 ($\pm$ 0.407) 1.348	-0.000 ($\pm$ 0.270) 0.894
planning a meal at low cost.	(-2,2)	0.318 ($\pm$ 0.232) 1.086	0.545 ($\pm$ 0.366) 1.214	0.091 ($\pm$ 0.285) 0.944
using leftovers to create a new meal.	(-2,2)	0.409 ($\pm$ 0.194) 0.908	0.727 ($\pm$ 0.273) 0.905	0.091 ($\pm$ 0.251) 0.831
being able to change what your family eats.	(-2,2)	-0.273 ($\pm$ 0.230) 1.077	0.091 ($\pm$ 0.343) 1.136	-0.636 ($\pm$ 0.279) 0.924
Total self-efficacy score	(-6,6)	1.955 ($\pm$ 0.698) 3.273	3.535 ($\pm$ 0.731) 2.423	0.360 ($\pm$ 1.000) 3.320

*Self-efficacy score was measured on a scale of 1-5 (1 = not at all confident, 5 = extremely confident) for each individual question.

Hypothesis #2: Correct responses to knowledge-based questions about the Food Guide Pyramid, as measured by the subjects' responses, would increase among middle school girls aged 12 to 14-years by attending a six-week culinary enrichment program based on the Social Cognitive Theory.

There does not appear to be an effect on the number of correct responses to knowledge-based questions due to the intervention. For the Wilcoxon's signed-rank test,

the sum of ranks equaled 64.5 with a p -value equal to 0.025. Since the p -value is greater than the designated α level equal to 0.01, there was insufficient evidence to conclude that the mean difference of correct responses to knowledge-based questions between pre- and post-intervention were significantly different from zero.

Table 4.4: Knowledge construct: mean correct responses to five knowledge-based items (n = 22).

Knowledge-based Items	Range of differences	Mean Differences ($\pm$ SE)		
		SD		
		Combined (n=22)	Oceano (n=11)	Arroyo Grande (n=11)
How many F&V* do health experts recommend eating every day?	(-1-1)	0.000 ($\pm$ 0.132) 0.617	0.091 ($\pm$ 0.211) 0.701	-0.091 ($\pm$ 0.163) 0.539
What source of whole grain is the healthiest for you?	(-1-1)	0.182 ($\pm$ 0.125) 0.588	0.000 ($\pm$ 0.135) 0.447	0.364 ($\pm$ 0.203) 0.674
What source of beverage is the healthiest for you?	(0-1)	0.046 ($\pm$ 0.046) 0.213	0.000 ($\pm$ 0.000) 0.000	0.091 ($\pm$ 0.091) 0.302
What source of fat is the healthiest for you?	(-1-1)	0.136 ($\pm$ 0.119) 0.560	-0.182 ($\pm$ 0.122) 0.405	0.455 ($\pm$ 0.157) 0.522
What source of meat is the healthiest for you?	(-1-1)	0.136 ($\pm$ 0.0997) 0.468	0.273 ($\pm$ 0.141) 0.467	-0.000 ($\pm$ 0.135) 0.447
Total correct responses	(-1-3)	0.500 ($\pm$ 0.226) 1.058	0.182 ($\pm$ 0.263) 0.874	0.818 ($\pm$ 0.352) 1.168

*Fruits and vegetables are abbreviated to F&V.

Knowledge of the USDA Food Guide Pyramid was measured to evaluate the effectiveness of the nutrition curriculum. Although the mean difference in knowledge showed practical and not statistical significance, there was still an increase in the number of correct responses after the intervention. Correct responses to knowledge-based items increased. With a pre-mean of 3.41 and a post-mean of 3.91 there was a 15 percent

increase in the participants' correct responses to knowledge-based items following the intervention. (See Figure 4.1).

Figure 4.1: Frequency graph to demonstrate the shift in the students' correct responses to knowledge-based questions for pre- versus post-intervention.

There was no difference pre- to post- on the mean for each of the knowledge-based questions. (See Table 4.5). The results indicated no change among the participants for the beverage item and the recommended dietary intake of fruits and vegetables item.

Table 4.5: Number of responses to knowledge-based items (n = 22).

	Pre-intervention			Post-intervention		
	Combined n=22 n (%)	Oceano n=11 n (%)	Arroyo Grande n=11 n (%)	Combined n=22 n (%)	Oceano n=11 n (%)	Arroyo Grande n=11 n (%)
How many fruits and vegetables do health experts recommend eating every day?						
None	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
One	1 (5)	1 (9)	0 (0)	1 (4)	1 (9)	0 (0)
Two	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Three	4 (18)	1 (9)	3 (27)	2 (9)	0 (0)	2 (18)
Four	3 (13.5)	2 (18)	1 (9)	5 (23)	3 (27)	2 (18)
Five or more*	11 (50)	5 (46)	6 (55)	11 (50)	6 (55)	5 (46)
Don't Know	3 (13.5)	2 (18)	1 (9)	3 (13)	1 (9)	2 (18)
Which source of whole grain is the healthiest for you?						
A white flour tortilla	7 (32)	2 (18)	5 (45.5)	2 (9)	1 (9)	1 (9)
A corn tortilla*	13 (59)	8 (73)	5 (45.5)	17 (77)	8 (73)	9 (82)
A slice of white bread	2 (9)	1 (9)	1 (9)	3 (14)	2 (18)	1 (9)
Which source of beverage is the healthiest for you?						
A 16 oz Gatorade (sports drink)	1 (5)	0 (0)	1 (9)	0 (0)	0 (0)	0 (0)
A big-gulp cola	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Water*	21 (95)	11 (100)	10 (91)	22 (100)	11 (100)	11 (100)
Which source of fat is the healthiest for you?						
Half an avocado*	14 (63.5)	9 (82)	5 (46)	17 (77)	7 (64)	10 (91)
1-oz slice American cheese	5 (23)	1 (9)	4 (36)	3 (14)	3 (27)	0 (0)
1 small bag of potato chips	3 (13.5)	1 (9)	2 (18)	2 (9)	1 (9)	1 (9)
Which source of meat is the healthiest for you?						
Grilled, skinless chicken breast*	16 (73)	6 (55)	10 (91)	19 (86)	9 (82)	10 (91)
Grilled hamburger	2 (9)	1 (9)	1 (9)	2 (9)	1 (9)	1 (9)
Fried pork	4 (18)	4 (36)	0 (0)	1 (5)	1 (9)	0 (0)

*The blue highlighted response represents the correct response to each knowledge-based item (0 = none correct, 5 = all correct).

Hypothesis #3: The proportion of students who perceived cooking a meal takes too much time and effort, as a barrier measured by the subjects' responses, would decrease among middle school girls aged 12 to 14-years by attending a six-week culinary enrichment program based on the Social Cognitive Theory.

There was insufficient evidence to conclude that the intervention had a reducing effect for this cooking barrier. In conclusion of the McNemar's test, the *p*-value equaled

1. This result indicated that the proportion of students who perceived that cooking a meal takes too much time and effort did not significantly change following the intervention.

Table 4.6: Mean ($\pm$ standard error) and standard deviation for the barriers items for each individual perceived barrier to cooking. Barrier scale consisted of: 0 = not selected, 1 = selected.

Why do you eat out?	Range of differences	Mean Difference ($\pm$ SE) SD		
		Combined (n=22)	Oceano (n=11)	Arroyo Grande (n=11)
Too much time & effort.	(-1-0)	-0.046 ($\pm$ 0.046) 0.213	-0.091 ($\pm$ 0.091) 0.302	0.000 ($\pm$ 0.000) 0.000
Too expensive.	(0-1)	0.091 ($\pm$ 0.063) 0.294	0.182 ($\pm$ 0.122) 0.405	0.000 ($\pm$ 0.000) 0.000
F&V* go bad quickly.	(0-0)	0.000 ($\pm$ 0.000) 0.000	0.000 ($\pm$ 0.000) 0.000	0.000 ($\pm$ 0.000) 0.000
F&V* aren't easy to find at the local market.	(0-0)	0.000 ($\pm$ 0.000) 0.000	0.000 ($\pm$ 0.000) 0.000	0.000 ($\pm$ 0.000) 0.000
Other:	(-1,1)			
Busy		-0.046 ($\pm$ 0.046) 0.213	0.000 ($\pm$ 0.000) 0.000	-0.091 ($\pm$ 0.091) 0.302
Something Different		-0.091 ($\pm$ 0.091) 0.426	0.000 ($\pm$ 0.135) 0.447	-0.182 ($\pm$ 0.122) 0.405
Lazy		-0.000 ($\pm$ 0.093) 0.436	0.000 ($\pm$ 0.135) 0.447	-0.000 ($\pm$ 0.135) 0.447
Have Fun		0.227 ($\pm$ 0.091) 0.429	0.182 ($\pm$ 0.122) 0.405	0.273 ($\pm$ 0.141) 0.467
Non-specific		-0.046 ($\pm$ 0.046) 0.213	-0.091 ($\pm$ 0.091) 0.302	0.000 ($\pm$ 0.000) 0.000

*F&V = fruits and vegetables. The barriers construct had 5 responses, of which each student could select between 0-5 responses.

Hypothesis #4: Middle school girls aged 12 to 14-years attending a six-week culinary enrichment program based on the Social Cognitive Theory would improve overall diet by decreasing the percent of fat consumed as part of total daily caloric intake into the optimal range as recommended by the U.S. Dietary Reference Intakes as measured by Block Fat Screener.

There appears to be no effect of the intervention in changing the amount of fat consumed by the subjects. Since the p -value equaled 0.25, there was insufficient

evidence to conclude that the proportion of students who self-reported consuming fat within the range 30-34.9 percent of total daily caloric intake was different following the culinary intervention.

Table 4.7: Number of participants with percent fat of total daily caloric intake for each of the four categories calculated as: 0 = not in category, 1 = within category.

Percent fat of total daily caloric intake	Range of differences	Mean Difference ($\pm$ SE)		
		SD		
		Combined (n=22)	Oceano (n=11)	Arroyo Grande (n=11)
Fat : < 30%	(-1,0)	-0.136 (0.075) 0.351	-0.182 (0.122) 0.405	-0.091 (0.091) 0.302
*30-34.9%	(-1,1)	0.136 (0.0997) 0.468	0.000 (0.135) 0.447	0.273 (0.141) 0.467
35-39.9%	(-1,1)	0.091 (0.112) 0.526	0.182 (0.182) 0.603	0.000 (0.135) 0.447
40-50%	(-1,1)	-0.091 (0.112) 0.526	-0.000 (0.135) 0.447	-0.182 (0.182) 0.603

*30-34.9% kcals from fat equal reference category.

Hypothesis #5: Middle school girls 12 to 14-years-old who attended 9 out of 12 sessions ($\geq 75\%$) of a six-week culinary enrichment program based on the Social Cognitive Theory would show a greater difference of correct responses to knowledge-based questions about the USDA Food Guide Pyramid compared to participants who attended less than 9 sessions ($< 75\%$).

There was insufficient evidence to conclude that there was a significant increase in the mean number of correct responses to knowledge-based questions between post- and pre-intervention for participants who attended at least 9 out of 12 sessions ($\geq 75\%$) with 15 degrees of freedom, a test statistic of 2.42, and a p-value equal to 0.014.

Figure 4.2: Frequency distribution of the increased trend of participants' correct responses to knowledge based questions with a “simulated control group” for attendance.

Separating the “high attendance” (n = 16) and “low attendance” (n = 6) participants simulated a control group to further investigate an increase in knowledge. The idea was that with higher participation, the subjects would have a greater increase in the number of correct responses to knowledge-based questions. As suggested by Resnicow et al. (2000), an attendance rate of greater than or equal to 75 percent was used to categorize attendance. Also, 75 percent was the average attendance rate for all of the participants who completed this culinary program. The mean differences of the participants' correct responses to knowledge-based questions for the “high-attendance” and the “low-attendance” were 0.69 and 0, respectively. Contrasting results between high and low attenders were not statistically significant; however, separating the “high attendance” participants did illustrate a greater increase of correct responses to knowledge-based questions.

CHAPTER 5

Discussion and Conclusion

Community nutrition education programs that utilize basic cooking skills are of limited availability to middle school girls in reduced-income communities. Specifically, this research was piloted to assess the effectiveness of a culinary intervention for middle school girls 12 to 14-years-old. This program was piloted for the benefit of future local community interventions in San Luis Obispo County through California Polytechnic State University's (Cal Poly) emerging Center for Obesity Prevention and Education. Results indicated that the program had a positive effect on the youths' confidence for using basic culinary skills as a potential tool for dietary changes.

Logistics and Management

The duration of the "Pink Chefs" program was determined based on the following rationale. As suggested by the Director of the emerging Center for Obesity Prevention and Education (COPE) at Cal Poly and Levy and Auld (2004), the duration of the program was spread over a six-week period to avoid information overload. During the six weeks, two classes per week were implemented for a total of 12 sessions. Unlike Resnicow et al. (2000) who implemented a six-month program, the six-weeks allowed the participants enough exposure to the enrichment program to be successful while avoiding a high attrition rate.

Analogous to most of the literature, the lessons were created in two-hour increments. Although Dougherty and Silver (2007) suggested extending the class by an extra 30 minutes to create a more relaxed environment, this after school program found that the bus transportation time would conflict with a 30 minute class extension;

therefore, the school bus made the additional time impractical. Every class was to include a 30-minute lecture with a 90-minute cooking practicum. Two hours was found to be adequate with each lesson discussing a nutritional element and a cooking skill, which was then practiced through creating the recipe of the day.

Prior to development of the lesson plans, a theory was chosen for program implementation. As recommended by Lytle and Achterberg (1995), the social cognitive theory was used as a guideline for this enrichment program to address areas of diet and health in conjunction with cooking skills. The “Pink Chefs” program emphasized teaching nutrition through basic cooking skills. As suggested in the literature (Resnicow et al., 2000), “Pink Chefs” focused on the behavioral capability (knowledge and skills) construct of the social cognitive theory and demonstrated improved self-efficacy for cooking, but not for dietary changes in the participants.

The pre- and post-questionnaires were created based on the social cognitive theory. After piloting the questionnaires in both Oceano and AG, some revisions were made to the questionnaire based on the results. The barriers addressed in both the pre- and post-questionnaires did not offer data relevant to these young teens because the barrier items were directed towards the family food gate keepers, more generally adults. Following completion of the pilot, future “Pink Chefs” programs would use the redesigned questionnaire. (See Appendix H for the revised questionnaires). In the pilot questionnaire, barrier results were difficult to analyze. Revising this question to be a yes/no response will be more useful for data collection and analysis. Further investigations should implement focus groups to address the population barriers prior to the intervention.

In order to implement this type of program in the community, there needs to be an established community foundation. The influential community mother was needed for additional guidance and discipline of the participants. Due to the lack of an influential mom and a supportive network through the school district, the Oceano group was much more disruptive than the AG group. Additionally, the “Pink Chefs” program had not adequately addressed behavior and expectations at the start of the Oceano program. The Oceano participants were extremely excited about the program and had difficulties keeping on task. Some of the participants would attend the beginning of the class and for whatever reason would leave early resulting in less knowledge and skills for cooking. During the cooking practicum, some subjects would misuse the kitchen tools. These disruptive participants were given a verbal warning and a call home to their parents. This method was effective. A youth behavioral contract was added to the beginning of the AG group and enforced during the program. (See Appendix G).

Some additional unexpected issues were encountered during the course of the program. The Oceano facility was a center available to the public at low cost and, unbeknownst to the PM, other events were scheduled concurrently with the culinary program. This was a major distraction to the participants. Also, the day prior to the start of the program, the facility held an event for another agency. The kitchen fire alarm was pulled by one of the renters, which sprayed non-potable water in the kitchen closing the facility. Another problem encountered was that the water main was shut off to the facility to repair water lines. There would have been insufficient water supply for washing hands, produce, and dishes during class, which would lead to improper

sanitation. However, this issue was resolved before the next class session; therefore, the class was not canceled.

In AG, facility issues also affected program implementation integrity. Different obstacles were discovered during the cooking practicum. Participants were overcrowded resulting in less than optimum exposure to lesson materials. Compared to the Oceano group, clean up during the cooking practicum felt rushed for some days because there was only one dishwashing station. An extra fifteen minutes would have created a more relaxed environment. Additionally, food items and supplies were stored across the middle school campus. Reported by the students, transporting items by hand from the storage shed to the kitchen was one of the least favorite things about the program (100%); therefore, the purchase of a cart for transporting supplies could alleviate that complaint. Ideally, a future program would use a facility with adequate storage space on site.

During the “Family Fiesta” event, observations were made at both locations. The Oceano group only had two families attend the fiesta. Although participants were sent home with an invitation for the upcoming event, participants might not have informed their families. Phone calls to families to notify them of the event could have been a possible solution. Another possible reason could be that the families were unable to attend due to work or other prior engagements. The AG group had at least one family member attend per student, which resulted in a large and celebratory “Family Fiesta” event of approximately 50 guests. This could be explained by the collaboration with an after school enrichment program and the existing relationship between families and agency. Bright Futures After School Program participants were already part of a

structured program and were more motivated, disciplined, and appeared to have increased family involvement compared to the Oceano group.

Financial Allocation and Support

Financial supporters partnered with the emerging COPE organization in order to improve the program's sustainability. The pilot relied on the budget of two dollars per student per day for food costs. For additional food costs of the program, the Food Bank Coalition of San Luis Obispo County donated food items from its south county location. The Arroyo Grande Community Hospital donated money to purchase: 1) food items not readily available from the Food Bank, and 2) incentives for the participants (e.g. measuring cup sets and spatulas for perfect attendance) and Pink Chef logo T-shirts as a program completion award for participants and volunteers. Additionally, the Oceano Community Center, Inc. and Lucia Mar School District offered the use of their kitchen facilities at a discounted rate. The Latino Outreach Council agreed to review Spanish documents for appropriateness and colloquial language; the Bright Futures After School Program paid an hourly rate for the PMs classroom time and donated food for the "Family Fiesta."

Facility and budget constraints impact where the program can be offered. The Oceano Community Center, Inc. (Oceano) was a brand new facility in a reduced-income predominately Latino community and was equipped with a full, industrial sized kitchen. This establishment was selected due to the center's service to the community, its location and amenities. The Oceano Community Center, Inc., offered the use of the site free of charge, but the Director of the emerging COPE stated that it is also this organization's responsibility to help support and sustain community collaborators and the programs that

they offer. Therefore, the Director of the emerging COPE organization proposed to pay rent at a reduced fee.

During the implementation of the program, the PM purchased the food needed for the weekly recipes, which was later reimbursed by Cal Poly's Kinesiology Department. It is highly recommended to establish a credit account at a local grocery store to track purchases, develop a budget of program costs, and to avoid volunteers or paid employees using personal funds.

Points for Improvement

The following factors influenced the implementation of the program. These factors could be applied throughout San Luis Obispo County to secure sustainability for future programs.

- 1) The presence of an influential mom would have strengthened the implementation of the Oceano program, as would having participants sign a behavior contract with set boundaries and expectations. Since a few participants were disruptive throughout the program, this may have hindered engagement and learning for other participants, which could have skewed the results.
- 2) The lack of the translator at the Oceano orientation meeting might have biased the sample based on decreased information being received by the primarily Spanish speaking families.
- 3) Volunteer professionalism should be maintained throughout the duration of the program. Volunteers must role model behavior for participants, such as arriving punctually for each class; leading and directing set-up and clean-up

tasks; and appropriate dress such as wearing close-toed shoes and head covers.

Strengths

The “Pink Chefs” program addressed the importance of diet quality related to health and wellness, which discussed health concerns of this population and older generations through basic nutrition and culinary skills. The participants were given the opportunity to practice these cooking skills through the culinary practicum. According to Larson et al., increasing self-efficacy for cooking through practical classes while honing the necessary knowledge and skills could potentially promote dietary improvements.

This pilot program tested the feasibility of implementing a culinary program in the community based on the location, schedules, recipes, and overall general interests. Oceano was a great facility because of its amenities and the location. Participants lived close to the community center, which made attending convenient. In addition, this facility could accommodate a larger sample due to the bigger kitchen compared to the AG facility. As previously mentioned, program attendance was impacted when scheduled in conflict with other family obligations, such as sports, quinceañeras and weddings; therefore, holding the program during after school hours seemed to work best for attendance.

Another strength demonstrated by this cooking class approach was the increased repetition to new foods, fruits and vegetables. At both locations, recipes were tested for palatability and whether or not they were age appropriate. The majority of the recipes fit the parameters of this age group. Through group discussions during the beginning of each class, the participants reported their like or dislike regarding the recipes. Overall,

the participants liked the recipes made during the program. One positive attribute noted by the participants were that the recipes showed them new and different ways to use fruits and vegetables. Initially, most participants stated they did not like celery. After adding celery to the chicken salad sandwich recipe, all participants liked celery. The dislike of a fruit or vegetable was a common theme during the course of the program. However, the participants changed their views after sampling the recipes. The hands-on approach could explain this change in food choices. As suggested by Larson et al. (2006), involvement in cooking meals could improve diet quality.

At the beginning of each class, the students discussed their families' review of the food item taken home from the previous lesson. Participants commonly reported that their families' were quite satisfied, ate the entire recipe and did not share with the participants. Some students stated that from the family's positive reviews, the family had more confidence in the student's ability and that the student was being allowed to select foods and/or help prepare meals.

Throughout the course of the program, youths were given the opportunity to see, prepare, and taste unfamiliar foods. For example, soybeans were introduced to the group in different forms: the bean, tofu, and soymilk. One participant from AG was a vegetarian and always wanted to try tofu, but was indecisive for fear of failure and budgetary constraints (not wanting to waste family money). After using tofu in one of the recipes, she purchased tofu at the local grocery store to prepare for her family.

Limitations

There were several limitations observed in this study. First, the sample size was too small to demonstrate significant results. Sample sizes were projected for future

implementation with two power levels for the self-efficacy and knowledge constructs.
(See Table 5.1).

Table 5.1: Projected sample sizes for self-efficacy and knowledge constructs with an alpha equal to 0.05.

	Power = 0.99	Power = 0.95
Self-efficacy: Mean difference 1.955 SD 3.273	N = 104	N = 74
Knowledge: Mean difference 0.500 SD 1.058	N = 166	N = 118

Second, the participants were not randomized, which would allow variables other than the culinary intervention to potentially affect the results. The subjects self-selected to participate in the study, which means some may have an interest in cooking prior to the study. This bias would limit the ability to generalize the results to other populations. In order to assess the program’s effectiveness without this bias, establishing a control group could eliminate this confounding variable. One design could have included randomization of the participants into the treatment group (cooking intervention) and the control group (nutrition education without the cooking practicum). This design should be utilized in future research.

Additionally, some self-efficacy items need to be reworded, although the self-efficacy construct demonstrated a significant result. For example, the item “using a knife safely when cooking” did not illustrate a large increase in confidence, which was opposite to what was predicted. Throughout the course of the program, the PM observed a drastic improvement with knife skills from all participants. The knife safety item could

be revised as a knowledge-based item (what kind of knife do you use for chopping parsley?) to better measure the change. The item, “being able to change what your family eats,” demonstrated decreased confidence from subjects at post-intervention. Perhaps, this item focused on a wrong goal (changing families’ diets) for this population. The goal could be rephrased to “influence” instead of “change” to more accurately reflect the impact a 12 to 14-year-old has on family meals.

One thought underlying increasing the participants’ self-efficacy for cooking was to influence dietary changes to a more nutrient dense diet. The Fat Screener was a tool used to measure dietary changes. This brief study did not demonstrate any current significant dietary changes. Although the Screener has been tested for validity, the food items were directed towards an adult audience, so the surveys may not accurately reflect the diets of this young teen, ethnic population. Also, participants may not have recorded their diets accurately. Even though useful information can be derived from measuring dietary recalls, the length of the screener was a daunting task for the youth participants. Future research should include a more precise dietary measure for this population. A measure of food behaviors targeted during the six weeks of lessons might be useful. In addition, future research could investigate long term effects of the intervention through follow-up interviews.

Finally, the culinary intervention at Oceano and AG slightly varied. Even though great efforts were taken to insure uniformity in lesson content between the two locations, teaching is an evolutionary process, which might have created some slight differences in the treatment between both programs. Regardless of any differences, all of the lesson content points were addressed at both locations. Recommended daily intakes of the food

groups were reviewed, but perhaps future research should include more interactive learning techniques to increase knowledge related to nutrition.

Conclusions

There is a need for this program in the community. The underlying idea for this program was to improve diet quality of the participants by increasing their self-efficacy for cooking and their knowledge of nutrition. The data showed that the program significantly increased the participants' confidence for cooking.

The AG group had a lower attrition rate compared to Oceano. The increased attrition rate among Oceano participants could be explained by the participants having prior obligations (family commitments, sports, and quinceañeras). In AG, the program was offered in conjunction with the Bright Futures After School Program as it offers a more structured environment for the implementation of the Pink Chefs.

Furthermore, the AG participants compared to the Oceano group, appeared to have greater family support as shown by the larger turnout for the "Family Fiesta." Family interaction in the kitchen is important as it develops a foundation of culinary skills, which potentially could improve diet quality (Verlegh and Candel, 1999; Bove, Sobal and Rauschenbach, 2003; Stead et al., 2004; Lautenschlager and Smith, 2007). Family community and school involvement are key elements to improve sustainability of healthful eating habits.

Additional research should be conducted to study the levels of family interaction corresponding to self-efficacy, barriers, and knowledge for cooking. Upon completion of such a study, more informative conclusions could be drawn not only from this pilot, but from any future research regarding this topic. Even though differences were seen

between the two groups (i.e. attrition rates, “Family Fiesta”), a probable rationale for these observations could not be determined due to a lack of information regarding family’s socio-economic standing. Therefore, future research should focus on sustaining this confidence for cooking by offering either longer lasting or multiple classes with advanced culinary programs.

This program developed considerable interest within reduced- income communities. Practical cooking classes were effective at increasing the participants’ confidence for cooking. The youth benefited from the hands-on approach by gaining leadership and social skills (working together as a team, communicating in a working environment, and delegating tasks). This collaborative community-based program provided a foundation for healthful meal preparation for the individuals that participated in the program and their families in an effort to prevent obesity and improve diet quality.

Bibliography

- Bandura, A. (1984). Recycling misconceptions of perceived self-efficacy. *Cognitive Therapy and Research*, 8, 231-255.
- Berghofer, E. (2005). Exploitation of convenience food in view of a diet diversification for better nutrition. *Forum of Nutrition*, 57, 112-123.
- Block, G., A. M. Hartman, and D. Naughton. (1990). A reduced dietary questionnaire: development and validation. *Epidemiology*, 1, 58-64.
- Bove, C. F., J. Sobal and B. S. Rauschenbach. (2003). Food choices among newly married couples: convergence, conflict, individualism, and projects. *Appetite*, 40, 25-41.
- Brown, B. J. and J. R. Hermann. (2005). Cooking classes increase fruit and vegetable intake and food safety behaviors in youth and adults. *Journal of Nutrition Education and Behavior*, 37, 104-105.
- Caballero, B. (2004). Obesity prevention in children: opportunities and challenges. *International Journal of Obesity*, 28, S90-S95.
- Candel, M. J. J. M. (2001). Consumers' convenience orientation towards meal preparation: conceptualization and measurement. *Appetite*, 36, 15-28.
- Capps Jr., O., J. R. Tedford and J. Havlicek Jr. (1985). Household demand for convenience and nonconvenience foods. *American Journal of Agricultural Economics*, 67, 862-869.
- Carlson, A. and S. Gerrior. (2006). Food source makes a difference in diet quality. *Journal of Nutrition Education and Behavior*, 38, 238-243.
- Centers for Disease Control and Prevention. (2000). Defining childhood overweight and obesity. Accessed: February 2, 2009.
<http://www.cdc.gov/nccdphp/dnpa/obesity/childhood/defining.htm>
- Centers for Disease Control and Prevention. (2006). U.S. obesity trends 1985-2007. Accessed: November 26, 2008.
<http://www.cdc.gov/nccdphp/dnpa/obesity/trend/maps/index.htm>
- Centers for Disease Control and Prevention. (2008). Childhood obesity. Accessed: February 16, 2009. <http://www.cdc.gov/healthyYouth/obesity/index.htm>
- Centers for Disease Control and Prevention. (2008). Diabetes: disabling disease to double by 2050. Accessed: November 26, 2008.
<http://www.cdc.gov/nccdphp/publications/aag/ddt.htm>

- Centers for Disease Control and Prevention. (2008). Division for heart disease and stroke prevention addressing the nations leading killers. Accessed: November 26, 2008. <http://www.cdc.gov/nccdphp/publications/AAG/dhdsp.htm>
- Centers for Disease Control and Prevention. (2008). Obesity halting the epidemic by making health easier: at a glance 2009. Accessed: January 6, 2009. <http://www.cdc.gov/NCCDPHP/publications/AAG/obesity.htm>
- Centers for Disease Control and Prevention. (2008). Overweight and Obesity. Accessed: November 26, 2008. <http://www.cdc.gov/nccdphp/dnpa/obesity/>
- Clark, L. and R. A. Foote. (2004). Building basic living skills in youth – kid’s chef school. Journal of Extension [on-line], 42. Available at: <http://www.joe.org/joe/2004june/iw5.shtml>
- Condasky, M., K. Graham, J. and Kamp. (2006). Cooking with a chef: an innovative program to improve mealtime practices and eating behaviors of caregivers of preschool children. Journal of Nutrition Education and Behavior, 38, 324-325.
- Contento, I. R. Nutrition Education: Linking Research, Theory, and Practice. Sudbry: Jones Bartlett Publishers, 2007.
- Cottone, E. and C. Bryd-Bredbenner. (2007). Knowledge and psychosocial effects of the film *Super Size Me* on young adults. Journal of the American Dietetic Association, 107, 1197-1203.
- Dairy Council of California. (2009). Meals matter: recipe and meal planning website. Accessed: February 15, 2009. <http://www.dairycouncilofca.org/>
- Dougherty, K. and C. Silver. (2007). Chef-nutritionist teams spark enjoyment and learning in cooking education series for 8- to 12-year-olds. Journal of Nutrition Education and Behavior, 39, 237-238.
- Flegal, K. M., R. J. Kuczmarski and C. L. Johnson. (1998). Overweight and obesity in the United States: prevalence and trends, 1960-1994. International Journal of Obesity and Related Metabolic Disorders, 22, 39-47.
- French, S. A., M. Story and R. W. Jeffery. (2001). Environmental influences on eating and physical activity. Annual Review of Public Health, 22, 309-335.
- Food Standards Agency. (2005). Questionnaire for cooking skills programmes: pre- and post-intervention. Accessed: September 21, 2008. <http://www.food.gov.uk/multimedia/pdfs/preintercookingskillsq.pdf#page=1>
- Garn, S. M. and M. LaVelle. (1985). Two-decade follow-up of fatness in early childhood. American Journal of Diseases of Children, 139, 181-185.

- Garson, D. (2008). Significance Tests for Two Dependent Samples: McNemar, Marginal Homogeneity, Sign, and Wilcoxon Tests. Accessed: December 23, 2008. <http://faculty.chass.ncsu.edu/garson/PA765/mcnemar.htm#assume>
- Gordon-Larson, P., K. M. Harris, D. S. Ward and B. M. Popkin. (2003). Acculturation and overweight-related behaviors among Hispanic immigrants to the US: the national longitudinal study of adolescent health. *Social Science and Medicine*, 57, 2023-2034.
- Guthrie, J. F., B. M. Derby, and A. S. Levy. (1999). What people know and do not know about nutrition. In: Frazao, E. (Ed.). *America's Eating Habits: changes and consequences*. Washington, D.C.: United States Department of Agriculture – USDA/Economic Research Service – ERS, 1999. Cap. 13, p. 243-280.
- Hyland, R., R. Stacy, A. Adamson and P. Moynihan. (2005). Nutrition-related health promotion through an after-school project: the responses of children and their families. *Social Science and Medicine*, 62, 758-768.
- Jabs, J. and C. M. Devine. (2006). Time scarcity and food choices: an overview. *Appetite*, 47, 196-204.
- Jeffery, R. W. and J. Utter. (2003). The changing environment and population obesity in the United States. *Obesity Research*, 11, 12S-22S.
- Kant, A. K. and B. I. Graubard. (2004). Eating out in America, 1987-2000: trends and nutritional correlates. *Preventive Medicine*, 38, 243-249.
- Kuchler, F., E. Golan, J. N. Variyam and S. R. Crutchfield. (2005). Obesity policy and the law of unintended consequences. Accessed: November 29, 2008. <http://www.ers.usda.gov/AmberWaves/june05/features/ObesityPolicy.htm>
- Kuczmarski, R. J. and K. M. Flegal. (2000). Criteria for definition of overweight and transition: background and recommendations for the United States. *The American Journal of Clinical Nutrition*, 72, 1074-1081.
- Lafferty, A., L. Marquart and M. Reicks. (2006). Hunting for whole grains: a supermarket tour. *Journal of Nutrition Education and Behavior*, 38, 197-198.
- Lang, T. and M. Caraher. (2001). Is there a culinary skills transition? Data and debate from the UK about changes in cooking culture. *Journal of the HEIA*, 8, 2-14.
- Larson, N. I., C. L. Perry, M. Story and D. Neumark-Sztainer. (2006). Food preparation by young adults is associated with better diet quality. *Journal of the American Dietetic Association*, 106, 2001-2007.
- Larson, N. I., M. Story, M. E. Eisenberg and D. Neumark-Sztainer. (2006). Food preparation and purchasing roles among adolescents: associations with

- sociodemographic characteristics and diet quality. *Journal of the American Dietetic Association*, 106, 211-218.
- Lautenschlager, L. and C. Smith. (2007). Beliefs, knowledge, and values held by inner-city youth about gardening, nutrition, and cooking. *Agriculture and Human Values*, 24, 245-258.
- Levy, J. and G. Auld. (2004). Cooking classes outperform cooking demonstrations for college sophomores. *Journal of Nutrition Education and Behavior*, 36, 197-203.
- Lin, B.-H. and E. Frazao. (1997). Nutritional quality of foods at and away from home. Economic Research Service/USDA.
- Lin, B.-H., E. Frazao and Guthrie. (1999). Away-from-home foods increasingly important to quality of American diet. Economic Research Service/USDA.
- Lyon, P., A. Colquhoun and E. Alexander. (2003). Deskillling the domestic kitchen: national tragedy or the making of a modern myth? *Food Service Technology*, 3, 167-175.
- Lytle, L. and C. Achterberg. (1995). Changing the diet of America's children: What works and why? *Journal of Nutrition Education*, 27, 250-260.
- Magarey, A. M., L. A. Daniels, T. J. Boulton and R. A. Cockington. (2003). Predicting obesity in early adulthood from childhood and parental obesity. *International Journal of Obesity and Related Metabolic Disorders*, 27, 320-329.
- McCrory, M. A., P. J. Fuss, N. P. Hays, A. G. Vinken, A. S. Greenberg and S. B. Roberts. (1999). Overeating in America: association between restaurant food consumption and body fatness in healthy adult men and women ages 19 to 80. *Obesity Research*, 7, 564-571.
- Meloche, J. (2003). Cooking with class: participation soars with hands-on learning and take-aways. *Journal of Nutrition Education and Behavior*, 35, 107.
- Minitab Inc. (2006). Minitab Statistical Software, Release 15 for Windows, State College, Pennsylvania.
- National Food Alliance. (1993). *Get Cooking!* London, UK: National Food Alliance, Department of Health and BBC Good Food.
- Nemours Foundation. (2009). Kids health: from the health experts of Nemours. Accessed: February 15, 2009. <http://kidshealth.org/index.html>

- Ogden, C. L., M. D. Carroll, L. R. Curtin, M. A. McDowell, C. J. Tabak and K. M. Flegal. (2006). Prevalence of overweight and obesity in the United States, 1999-2004. *Journal of the American Medical Association*, 295, 1549-1555.
- Ogden, C. L., M. D. Carroll and K. M. Flegal. (2008). High body mass index for age among US children and adolescents, 2003-2006. *Journal of the American Medical Association*, 299, 2401-2405.
- Oregon State University Extension Services. (2008). Healthy recipes: your source for nutritious, low-cost meals. Accessed: February 15, 2009. <http://healthyrecipes.oregonstate.edu/>
- Pinhas-Hamel, O. and P. Zeitler. (2005). The global spread of type 2 diabetes mellitus in children and adolescents. *The Journal of Pediatrics*, 146, 693-700.
- R Development Core Team. (2008). R: a language and environment for statistical computing. Accessed: November 15, 2008. <http://www.R-project.org>
- Reimer, K., C. Smith, M. Reicks, H. Henry, R. Thomas and J. Atwell. (2004). Child-feeding strategies of African-American women according to stage of change for fruit and vegetable consumption. *Public Health Nutrition*, 7, 505-512.
- Resnicow, K., A. L. Yaroch, A. Davis, D. T. Wang, S. Carter, L. Slaughter, D. Coleman and T. Baranowski. (2000). Go Girls!: Results from a nutrition and physical activity program for low-income, overweight African American females. *Health Education and Behavior*, 27, 616-631.
- Rinderknecht, K. and C. Smith. (2004). Social cognitive theory in an after-school nutrition intervention for urban Native American youth. *Journal of Nutrition Education and Behavior*, 36, 298-304.
- Schwarzer, R. and B. Renner. (2000). Social-cognitive predictors of health behavior: action self-efficacy and coping self-efficacy. *Health Psychology*, 5, 487-495.
- Short, F. (2007). Cooking, convenience and dis-connection. *Inter: A European Cultural Studies Conference in Sweden* (pp. 553-563). Norrköping: Norrköping University Electronic Press.
- Stead, M., M. Caraher, W. Wrieden, P. Longbottom, K. Valentine and A. Anderson. (2004). Confident, fearful and hopeless cooks: findings from the development of a food-skills initiative. *British Food Journal*, 106, 274-287.
- Story, M., D. Neumark-Sztainer and S. French. (2002). Individual and environmental influences on adolescent eating behaviors. *The Journal of the American Dietetic Association*, 102, s40-s51.

- Taveras, E. M., C. S. Berkey, S. L. Rifas-Shiman, D. S. Ludwig, H. R. H. Rockett, A. E. Field, G. A. Colditz and M. W. Gillman. (2005). Association of consumption of fried food away from home with body mass index and diet quality in older children and adolescents. *Pediatrics*, 116, e518-e524.
- Television Food Network G.P. (2009). Recipes and cooking. Accessed: February 15, 2009. <http://www.foodnetwork.com/>
- The SEARCH for Diabetes in Youth Study Group. (2004). SEARCH for diabetes in youth: multi-center study of the prevalence, incidence and classification of diabetes mellitus in youth. *Controlled Clinical Trials*, 25, 458-471.
- Thonney, P. F. and C. A. Bisogni. (2006). Cooking up Fun! A youth development strategy that promotes independent food skills. *Journal of Nutrition Education and Behavior*, 38, 321-323.
- Tibbs, T., D. Harie-Joshu, K. B. Schechtman, R. C. Brownson, M. S. Nanney, C. Houston and W. Auslander. (2001). The relationship between parental modeling, eating patterns, and dietary intake among African-American parents. *Journal of the American Dietetic Association*, 101, 535-541.
- Traub, L. G. and D. C. Odland. (1979). Convenience foods and home-prepared foods: comparative costs, yield and quality. *Agriculture Economic Report No. 429*. Washington DC; U.S. Department of Agriculture.
- US Census Bureau. (2006). 2006 American community survey, S2301 employment status. Accessed: October 25, 2007. http://factfinder.census.gov/servlet/STTable?_bm=y&-geo_id=01000US&-qr_name=ACS_2006_EST_G00_S2301&-ds_name=ACS_2006_EST_G00_&-redoLog=false
- US Department of Agriculture: Economic Research Service. (2005). Obesity policy and the law of unintended consequences. Accessed: February 8, 2009. <http://www.ers.usda.gov/amberwaves/june05/features/ObesityPolicy.htm>
- US Department of Agriculture: Economic Research Service. (2007). Rural population and migration: trend 5 – diversity increases in nonmetro America. Accessed: February 16, 2009. <http://www.ers.usda.gov/Briefing/Population/Diversity.htm>
- US Department of Agriculture. (2006). Comparison of selected nutrients in the dietary approaches to stop hypertension (DASH) eating plan, the USDA Food Guide, and nutrient intakes recommended per day by the Institute of Medicine. Accessed: December 1, 2008. <http://www.health.gov/DIETARYGUIDELINES/dga2005/document/pdf/dga2005.pdf>

- US Department of Agriculture. (2007). Food CPI, prices, and expenditures. Accessed: October 22, 2007. <http://www.ers.usda.gov/Briefing/CPIFoodAndExpenditures/>
- US Department of Agriculture. (2008). Diet quality of Americans in 1994-96 and 2001-02 as measured by the Healthy Eating Index-2005. Accessed: December 1, 2008. <http://www.cnpp.usda.gov/Publications/NutritionInsights/Insight37.pdf>
- US Department of Agriculture. (2009). MyPyramid.gov: steps to a healthier you. Accessed: February 15, 2009. <http://mypyramid.gov/>
- US Department of Health and Human Services. (2005). Dietary guidelines for Americans 2005. Accessed: November 8, 2007. <http://www.healthierus.gov/dietaryguidelines>
- US Department of Health and Human Services. (2008). Obesity prevalence. Accessed: November 28, 2008. <http://www.cdc.gov/nccdphp/dnpa/obesity/childhood/prevalence.htm>
- US Department of Labor. (2000). Changes in women's labor force participation in the 20th century, Bureau of Labor Statistics. Accessed: November 6, 2007. <http://www.bls.gov/opub/ted/2000/feb/wk3/art03.htm>
- Verlegh, P. W. J. and M. J. J. M. Candel. (1999). The consumption of convenience foods: reference groups and eating situations. *Food Quality and Preference*, 10, 457-464.
- von Hippel, P. T., B. Powell, D. B. Downey and N. J. Rowland. (2007). Changes in children's body mass index during the school year and during summer vacation. *American Journal of Public Health*, 97, 1-7.
- Whitaker, R. C., J. A. Wright, M. S. Pepe, K. D. Seidel and W. H. Dietz. (1997). Predicting obesity in young adulthood from childhood and parental obesity. *New England Journal of Medicine*, 37(13), 869-873.
- World Health Organization. (1946). WHO definition of health. Accessed: February 2, 2009. <http://www.who.int/about/definition/en/print.html>
- World Health Organization. (2008). BMI classification. Accessed: November 26, 2008. http://www.who.int/bmi/index.jsp?introPage=intro_3.html
- Wrieden, W. L., A. S. Anderson, P. J. Longbottom, K. Valentine, M. Stead, M. Caraher, T. Lang, B. Gray and E. Dowler. (2007). The impact of a community-based food skills intervention on cooking confidence, food preparation methods and dietary choices – an exploratory trial. *Public Health Nutrition*, 10, 203-211.
- WSU Stevens County Extension. (2003). What U.S. consumers buy and why. Accessed: November 5, 2007. http://stevens.wsu.edu/Community/Consumer_Buying.htm

Appendices

APPENDIX A

“Pink Chefs” Questionnaire

- i. Pre-questionnaire
- ii. Post-questionnaire

ID# [][]

Before We Start: Questionnaire for the **Pink Chefs**
Cooking is Cool!

How do YOU prepare meals?

Q1. What kind of cooking do you do at the moment? (Please mark as many boxes as appropriate)

Cook convenience foods and ready-made meals	[]1
Put together ready-made ingredients to make a complete meal	[]2
Prepare dishes from basic ingredients, from scratch	[]3
Don't cook at all	[]4
Other, please explain _____	[]5

Q2. In a normal week, how often do you prepare and cook a meal from basic ingredients, from scratch. For example, making a meat and vegetable dish starting with raw vegetables and raw meat? (Please mark one box)

Daily	[]1	Once a week	[]4
4-6 times a week	[]2	Less than once a week	[]5
2-3 times a week	[]3	Never	[]6

How do YOU feel about? (Please select one)

Q3. How important is it to learn to cook for yourself and your family?

1	2	3	4	5
Not at all
Important		Important		Extremely
Important

Q4. How confident do you feel about being able to cook from basic ingredients, from scratch?

1	2	3	4	5
Not at all
Confident		Confident		Extremely
Confident

Q5. How confident do you feel about creating meals using new ingredients? For example, new fruits, vegetables, spices, herbs.

1	2	3	4	5
Not at all
Confident		Confident		Extremely
Confident

ID# [] []

Q6. How confident do you feel about following a simple recipe?

1	2	3	4	5
Not at all		Confident		Extremely
Confident				Confident

Q7. How confident do you feel about using a knife safely when cooking?

1	2	3	4	5
Not at all		Confident		Extremely
Confident				Confident

Q8. How confident do you feel about planning a meal at low cost?

1	2	3	4	5
Not at all		Confident		Extremely
Confident				Confident

Q9. How confident do you feel about using leftovers to create a new meal?

1	2	3	4	5
Not at all		Confident		Extremely
Confident				Confident

Q10. How confident do you feel about being able to change what your family eats?

1	2	3	4	5
Not at all		Confident		Extremely
Confident				Confident

Agree or disagree with the following question.....!

Q11. I think cooking for my family is cool.

1	2	3	4	5
Not at all		Agree		Extremely Agree
Agree				

Q 12. Most kids my age think that cooking for the family is cool.

1	2	3	4	5
Not at all		Agree		Extremely Agree
Agree				

Q13. Most people in my family think that _____ should know how to cook. (Please circle all that apply)

1	2	3	4
All Boys	All Girls	All Women	All Men

ID# [] []

What do YOU think? (Please mark one box)

Q14. Do you think you will increase the amount of fruit and vegetables you eat in the next 6-12 months?

No, definitely not	☐ 1	Yes, probably	☐ 4
No, probably not	☐ 2	Yes, definitely	☐ 5
Possibly	☐ 3	Don't know	☐ 6

Q15. How many fruits and vegetables do you think health experts recommend eating every day?

None	☐ 1	Four	☐ 5
One	☐ 2	Five or more	☐ 6
Two	☐ 3	Don't Know	☐ 7
Three	☐ 4		

When planning a meal, which foods are healthiest for YOU.....?
(Please mark one box per line)

Q16. Which source of whole grain is healthiest for you?

☐ 1	A white flour tortilla
☐ 2	A corn tortilla
☐ 3	A slice of white bread

Q17. Which beverage is healthiest for you?

☐ 1	A 16-ounce bottle of Gatorade (or other sports drink)
☐ 2	A big-gulp cola
☐ 3	Water

Q18. Which source of fat is healthies for you?

☐ 1	Half an avocado
☐ 2	One-ounce slice of American cheese
☐ 3	One 'grab-bag' size (small) of potato chips

ID# [] []

Q19. Which source of meat is healthiest for you?

- ☐ 1 Grilled, skinless chicken breast
- ☐ 2 Grilled hamburger
- ☐ 3 Fried pork

How do YOU feel about convenience foods

Q20. How often do you and your family eat out?

Daily	☐ 1	Once a week	☐ 4
4-6 times a week	☐ 2	Less than once a week	☐ 5
2-3 times a week	☐ 3	Never	☐ 6

Q21. Why do you eat out? (Please mark as many boxes as appropriate)

Cooking a meal takes too much time and effort	☐ 1
Cooking a meal can be expensive (eating out saves money)	☐ 2
Fruits and vegetables go bad quickly	☐ 3
Fruits and vegetables aren't easy to find at the local market	☐ 4
Other, please explain _____	☐ 5

Q22. Where do you like to eat out? (List 3 places)

- 1) _____
- 2) _____
- 3) _____

Q23. What kind of foods do you eat when you eat out? (List 3 kinds of foods)

- 1) _____
- 2) _____
- 3) _____

ID# [][]

What do YOU usually eat? (Please mark one box per line)

Fruits, Vegetables, and Grains	Less than 1/WEEK	Once a WEEK	2-3 times a WEEK	4-6 times a WEEK	Once a DAY	2+ a DAY
Fruit juice, like orange, apple, grape, fresh, frozen or canned. (Not sodas or other drinks)	1	2	3	4	5	6
How often do you eat any fruit, fresh or canned (not counting juice?)	1	2	3	4	5	6
Vegetable juice, like tomato juice, V-8, carrot	1	2	3	4	5	6
Green salad	1	2	3	4	5	6
Potatoes, any kind, including baked, mashed or french fried	1	2	3	4	5	6
Vegetable soup, or stew with vegetables	1	2	3	4	5	6
Any other vegetables, including string beans, peas, corn, broccoli or any other kind	1	2	3	4	5	6
Fiber cereals like Raisin Bran, Shredded Wheat or Fruit-n-Fiber	1	2	3	4	5	6
Beans such as baked beans, pinto, kidney, or lentils (not green beans)	1	2	3	4	5	6
Dark bread such as whole wheat or rye	1	2	3	4	5	6

ID# [][]

What do YOU usually eat? (Please mark one box per line)

Meats & Snacks	1 time per MONTH or less	2-3 times a MONTH	1-2 times a WEEK	3-4 times a WEEK	5+ times per WEEK
Hamburgers, ground beef, meat burritos, tacos	1	2	3	4	5
Beef or pork, such as steaks, roasts, ribs, or in sandwiches	1	2	3	4	5
Fried chicken	1	2	3	4	5
Hot dogs, or Polish or Italian sausage	1	2	3	4	5
Cold cuts, lunch meats, ham (not low-fat)	1	2	3	4	5
Bacon or breakfast sausage	1	2	3	4	5
Salad dressings (not low-fat)	1	2	3	4	5
Margarine, butter or mayo on bread or potatoes	1	2	3	4	5
Margarine, butter or oil in cooking	1	2	3	4	5
Eggs (not Egg Beaters or just egg whites)	1	2	3	4	5
Pizza	1	2	3	4	5
Cheese, cheese spread (not low-fat)	1	2	3	4	5
Whole milk	1	2	3	4	5
French fries, fried potatoes	1	2	3	4	5
Corn chips, potato chips, popcorn, crackers	1	2	3	4	5
Doughnuts, pastries, cake, cookies (not low-fat)	1	2	3	4	5
Ice cream (not sherbet or non-fat)	1	2	3	4	5

ID# [] []

Details about yourself.....

Please complete the following section about yourself; your responses will be kept strictly PRIVATE and are important to help us to analyze the questionnaire.

Name _____

Date _____

School _____

Age _____

Grade _____

Zip Code _____

Details about ethnic/cultural background.....

To which of these groups do you consider that you belong? (Please mark one box)

1	White
2	Native Hawaiian or Other Pacific Islander
3	Black or African American
4	Hispanic or Latino

5	Asian American
6	American Indian or Alaskan Native
7	Multiracial

Are you allergic to any foods? If so, please list...

Thank you for taking the time to complete this questionnaire!

ID# [] []

At the End: Questionnaire for the **Pink Chefs**
Cooking is Cool!

How do YOU prepare meals?

Q1. What kind of cooking do you do at the moment? (Please mark as many boxes as appropriate)

Cook convenience foods and ready-made meals	[]1
Put together ready-made ingredients to make a complete meal	[]2
Prepare dishes from basic ingredients, from scratch	[]3
Don't cook at all	[]4
Other, please explain _____	[]5

Q2. In a normal week, how often do you prepare and cook a meal from basic ingredients, from scratch. For example, making a meat and vegetable dish starting with raw vegetables and raw meat? (Please mark one box)

Daily	[]1	Once a week	[]4
4-6 times a week	[]2	Less than once a week	[]5
2-3 times a week	[]3	Never	[]6

How do YOU feel about? (Please select one)

Q3. How important is it to learn to cook for yourself and your family?

1	2	3	4	5
Not at all
Important		Important		Extremely
Important

Q4. How confident do you feel about being able to cook from basic ingredients, from scratch?

1	2	3	4	5
Not at all
Confident		Confident		Extremely
Confident

Q5. How confident do you feel about creating meals using new ingredients? For example, new fruits, vegetables, spices, herbs.

1	2	3	4	5
Not at all
Confident		Confident		Extremely
Confident

ID# [][]

Q6. How confident do you feel about following a simple recipe?

1	2	3	4	5
Not at all		Confident		Extremely
Confident				Confident

Q7. How confident do you feel about using a knife safely when cooking?

1	2	3	4	5
Not at all		Confident		Extremely
Confident				Confident

Q8. How confident do you feel about planning a meal at low cost?

1	2	3	4	5
Not at all		Confident		Extremely
Confident				Confident

Q9. How confident do you feel about using leftovers to create a new meal?

1	2	3	4	5
Not at all		Confident		Extremely
Confident				Confident

Q10. How confident do you feel about being able to change what your family eats?

1	2	3	4	5
Not at all		Confident		Extremely
Confident				Confident

Agree or disagree with the following question.....!

Q11. I think cooking for my family is cool.

1	2	3	4	5
Not at all		Agree		Extremely Agree
Agree				

Q 12. Most kids my age think that cooking for the family is cool.

1	2	3	4	5
Not at all		Agree		Extremely Agree
Agree				

Q13. Most people in my family think that _____ should know how to cook. (Please circle all that apply)

1	2	3	4
All Boys	All Girls	All Women	All Men

ID# [] []

What do YOU think? (Please mark one box)

Q14. Do you think you will increase the amount of fruit and vegetables you eat in the next 6-12 months?

No, definitely not	☐ 1	Yes, probably	☐ 4
No, probably not	☐ 2	Yes, definitely	☐ 5
Possibly	☐ 3	Don't know	☐ 6

Q15. How many fruits and vegetables do you think health experts recommend eating every day?

None	☐ 1	Four	☐ 5
One	☐ 2	Five or more	☐ 6
Two	☐ 3	Don't Know	☐ 7
Three	☐ 4		

When planning a meal, which foods are healthiest for YOU.....?
(Please mark one box per line)

Q16. Which source of whole grain is healthiest for you?

- ☐1 A white flour tortilla
- ☐2 A corn tortilla
- ☐3 A slice of white bread

Q17. Which beverage is healthiest for you?

- ☐1 A 16-ounce bottle of Gatorade (or other sports drink)
- ☐2 A big-gulp cola
- ☐3 Water

Q18. Which source of fat is healthies for you?

- ☐1 Half an avocado
- ☐2 One-ounce slice of American cheese
- ☐3 One 'grab-bag' size (small) of potato chips

ID# [] []

Q19. Which source of meat is healthiest for you?

- ☐1 Grilled, skinless chicken breast
- ☐2 Grilled hamburger
- ☐3 Fried pork

How do YOU feel about convenience foods

Q20. How often do you and your family eat out?

Daily	☐ 1	Once a week	☐ 1
4-6 times a week	☐ 2	Less than once a week	☐ 2
2-3 times a week	☐ 3	Never	☐ 3

Q21. Why do you eat out? (Please mark as many boxes as appropriate)

Cooking a meal takes too much time and effort	☐ 1
Cooking a meal can be expensive (eating out saves money)	☐ 2
Fruits and vegetables go bad quickly	☐ 3
Fruits and vegetables aren't easy to find at the local market	☐ 4
Other, please explain _____	☐ 5

Q22. Where do you like to eat out? (List 3 places)

- 1) _____
- 2) _____
- 3) _____

Q23. What kind of foods do you eat when you eat out? (List 3 kinds of foods)

- 1) _____
- 2) _____
- 3) _____

ID# [][]

What do YOU usually eat? (Please mark one box per line)

Fruits, Vegetables, and Grains	Less than 1/WEEK	Once a WEEK	2-3 times a WEEK	4-6 times a WEEK	Once a DAY	2+ a DAY
Fruit juice, like orange, apple, grape, fresh, frozen or canned. (Not sodas or other drinks)	1	2	3	4	5	6
How often do you eat any fruit, fresh or canned (not counting juice?)	1	2	3	4	5	6
Vegetable juice, like tomato juice, V-8, carrot	1	2	3	4	5	6
Green salad	1	2	3	4	5	6
Potatoes, any kind, including baked, mashed or french fried	1	2	3	4	5	6
Vegetable soup, or stew with vegetables	1	2	3	4	5	6
Any other vegetables, including string beans, peas, corn, broccoli or any other kind	1	2	3	4	5	6
Fiber cereals like Raisin Bran, Shredded Wheat or Fruit-n-Fiber	1	2	3	4	5	6
Beans such as baked beans, pinto, kidney, or lentils (not green beans)	1	2	3	4	5	6
Dark bread such as whole wheat or rye	1	2	3	4	5	6

ID# [][]

What do YOU usually eat? (Please mark one box per line)

Meats & Snacks	1 time per MONTH or less	2-3 times a MONTH	1-2 times a WEEK	3-4 times a WEEK	5+ times per WEEK
Hamburgers, ground beef, meat burritos, tacos	1	2	3	4	5
Beef or pork, such as steaks, roasts, ribs, or in sandwiches	1	2	3	4	5
Fried chicken	1	2	3	4	5
Hot dogs, or Polish or Italian sausage	1	2	3	4	5
Cold cuts, lunch meats, ham (not low-fat)	1	2	3	4	5
Bacon or breakfast sausage	1	2	3	4	5
Salad dressings (not low-fat)	1	2	3	4	5
Margarine, butter or mayo on bread or potatoes	1	2	3	4	5
Margarine, butter or oil in cooking	1	2	3	4	5
Eggs (not Egg Beaters or just egg whites)	1	2	3	4	5
Pizza	1	2	3	4	5
Cheese, cheese spread (not low-fat)	1	2	3	4	5
Whole milk	1	2	3	4	5
French fries, fried potatoes	1	2	3	4	5
Corn chips, potato chips, popcorn, crackers	1	2	3	4	5
Doughnuts, pastries, cake, cookies (not low-fat)	1	2	3	4	5
Ice cream (not sherbet or non-fat)	1	2	3	4	5

ID# [][]

How do YOU feel about the cooking course.....?

List 3 things you like about the cooking course.

1)

2)

3)

List 3 things you did not like about the cooking course.

1)

2)

3)

List 3 things to improve and make the cooking course better.

1)

2)

3)

Any other comments...

Thank you for taking the time to complete this questionnaire!

APPENDIX B

Informed Consent Form (English and Spanish)

Informed Consent Form for Cal Poly Research

INFORMED CONSENT TO PARTICIPATE IN: **Pink Chefs**

A research project using cooking classes to increase confidence for cooking meals prepared at home is being conducted by Julie Chessen from the Department of Nutrition at Cal Poly, San Luis Obispo, California. The purpose of this study is to improve your child's confidence for cooking and to teach your child menu planning, food buying and food preparation skills.

Your child is being asked to take part in this study by attending a total of 12 educational cooking classes: two classes per week for six weeks (2-2.5 hours each). These classes will include a short talk regarding the daily topic; group activities and games; and cooking the recipe of the day. There will be a 2 hour focus group directly after the completion of the program to discuss attitudes towards cooking, diet, and exercise. The program will take place at the *Mesa Middle School, 2555 Halcyon Rd., Arroyo Grande*. No transportation to or from the Mesa Middle School will be provided. Participation in the program will occur during the following days and times:

November 3 / 2008 – December 12 / 2008:

Monday: 2:30-4:30 pm

Wednesday: 2:30-4:30 pm

In addition, your child will be asked to complete a survey before and a survey after the study. These questions ask about your child's current diet, attitudes towards cooking, and general nutrition knowledge. Verbal questions will be asked about your family's preference of the weekly recipe. Please be aware that your child is not required to participate in this research and your child may discontinue her participation at any time. Your child may also omit any questions she prefers not to answer.

During food preparation, your child will be directly supervised to reduce the risk of injury. Your child will be required to wear closed-toed shoes with traction (slip-resistant shoes) for their protection. Your child will be taught safety rules for extinguishing a fire (a fire extinguisher is located in the kitchen), proper knife use and storage, and consistent use of pot holders to reduce the risk of burns.

The possible risks associated with participation in this study are minor but may include burns from stovetop, oven, scolding water, cuts from knives, falls from spillage, choking from food consumption, or psychological stress from completing survey questions. If your child should experience any injuries due to possible cuts or burns, please be aware that you may contact your own physician/clinic or the Arroyo Grande Fire Department at 2391 Willow Rd., Arroyo Grande (805) 473-7171. Insurance coverage will not be offered for this program, should your child experience any injuries due to participation in the classes. If you should experience any discomfort with the questions, please be aware that you may contact Dr. Ann McDermott, Director, at (805) 756-6447 for assistance.

To protect your child's confidentiality all identifying information will be kept in a filing cabinet in a locked room. Participants will only be identified by code number on data sheets or other paperwork. Only project coordinators will have access to the information. Your child's responses will remain private and only presented as anonymous or group data.

Potential benefits associated with this program include: increased knowledge of nutrition and web-based cooking resources; building skills in healthful cooking, communication, time management and goal setting; and increased confidence for cooking family meals. All participants will bring food home weekly and receive a recipe book. Other incentives your child may receive include cooking tools, costume jewelry (earrings, bracelets, necklaces), and markers or other art materials. These other incentives are given for attendance and participation in activities and games.

- ☐ Yes, I give permission for my child's photo to be taken for presentations and media use.
- ☐ No, I do not give permission for my child's photo to be taken for presentations and media use.

If you have questions regarding this study or would like to be informed of the results when the study is completed, please feel free to contact Dr. Ann McDermott at (805) 756- 6447 and/or Dr. Lisa Nicholson at (805) 756-7383. If you have questions or concerns regarding the manner in which the study is conducted, you may contact Steve Davis, Chair of the Cal Poly Human Subjects Committee, at (805) 756-2754, sdavis@calpoly.edu, or Susan Opava, Dean of Research and Graduate Programs, at (805) 756-1508, sopava@calpoly.edu.

If your child agrees to voluntarily participate in this research project as described, please indicate your agreement by signing below. Please keep one copy of this form for your reference, and thank you for your participation in this study.

Name of Child Volunteer	Date
-------------------------	------

Signature of Parent	Date
---------------------	------

Emergency Contact Person	Phone #
--------------------------	---------

Signature of Researcher	Date
-------------------------	------

Forma de consentimiento Informado.

CONSENTIMIENTO PARA PARTICIPAR EN UN PROYECTO DE INVESTIGACION
: Los Pink Chefs

Un proyecto de investigación que estudia el uso de clases de cocina para desarrollar confianza en la habilidad de cocinar en la casa, será conduciendo por Julie Chessen del Departamento de Nutrición de Cal Poly, San Luis Obispo, California. El propósito de este estudio es mejorar la confianza de su hija para cocinar y enseñarle a su hija como planear un menú, comprar los ingredientes y preparar el alimento.

Le estamos pidiendo a su hija que participe en este estudio asistiendo a un total de 12 clases educativas de cocina: dos clases por semana por seis semanas (2-2.5 horas cada clase). Estas clases incluirán una charla corta respecto al tópico del día; actividades en grupo y juegos; y cocinando la receta del día. Habrá un 2 grupo de foco de hora directamente después de que la terminación del programa para discutir actitudes hacia cocina, hacia la dieta, y hacia el ejercicio. El programa sucederá en el *Mesa Middle School, 2555 Halcyon Rd., Arroyo Grande*. No habrá ningún transporte a o desde el centro de comunidad. La participación en el programa se llevara a cabo durante los siguientes días y horas:

Noviembre 3/2008 – Diciembre 12/2008

El lunes: 2:30-4:30 pm

Miércoles: 2:30-4:30 pm

Además, a su hija le pedirán llenar una encuesta antes y después del estudio. Estas preguntas piden información acerca de la dieta actual de su hija, actitudes hacia el cocinar, y conocimiento general sobre la nutrición. Por favor entienda que su hija no esta obligada a participar en esta investigación y que puede discontinuar su participación en cualquier momento. Su hija puede también omitir cualquier pregunta que ella prefiera no contestar.

Durante la preparación de la comida, su hija será supervisada directamente para reducir el riesgo de que se lesiones. Se le pedirá a su hija que use zapatos cerrados con tracción (zapatos resistentes a resbalar) para su protección. Se enseñaran a su hija las reglas de seguridad para apagar un fuego (un extintor está situado en la cocina), uso apropiado del cuchillo y como guardarlo apropiadamente y el uso constante de las agarraderas de las ollas para reducir el riesgo de quemaduras.

Los riesgos posibles asociados con la participación en este estudio son menores pero pueden incluir quemaduras de la estufa, horno o agua caliente, cortes de cuchillo, caídas del derramamiento, atorarse con la comida y el estrés psicológico de completar las preguntas de la encuesta. Si su hija resulta tener una lesión debido a un corte o una quemadura, por favor entienda que usted puede llamar a su propio doctor/clínica o al departamento de bomberos de Arroyo Grande (2391 Willow Rd., Arroyo Grande) al (805) 473-7171. Este programa no ofrece cobertura medica, sí su hija se lesiona debido a su participación en estas clases. Si usted tiene alguna preocupación sobre las preguntas de la encuesta, por favor sepa que usted puede llamar a la Dra. Ann McDermott, la directora del programa. Al (805) 756-6447 para que le ayude.

Para proteger la información confidencial de su hija toda la información que la identifique será mantenida en un gabinete bajo llave en un cuarto seguro. Las participantes serán identificadas solamente por un número de código en las hojas de datos u otras formas. Solamente los coordinadores del proyecto tendrán acceso a la información. Las respuestas de su niña se mantendrán en privado y solamente serán presentadas como datos anónimos o del grupo.

Los beneficios potenciales asociadas con este programa incluyen: el aumento del conocimiento acerca de la nutrición y los recursos de cocina en la Internet; el aprender a cocinar comida saludable, mejorar la comunicación, manejar su tiempo y determinar su meta; y desarrollar mas confianza en su habilidad de cocinar para la familia. Cada semana todas las participantes llevaran la comida a su casa y recibirán un libro de recetas. Otros incentivos que su hija pueda recibir incluyen utensilios de cocina, joyas (pendientes, pulseras, collares), y los marcadores u otros materiales de arte. Estos otros incentivos son dados por atender y participar en actividades y juegos.

- ☐ Sí, doy permiso para que la foto de mi niña sea tomada para presentaciones y el uso de los medios de comunicación.
- ☐ No, no doy permiso para que la foto de mi niña sea tomada para presentaciones y el uso de los medios de comunicación.

Si usted tiene preguntas con respecto a este estudio o quisiera ser informado de los resultados cuando se termine el estudio, por favor siéntase en confianza de comunicarse con la Dra. Ann McDermott al (805) 756- 6447 y/o la Dra. Lisa Nicholson al (805) 756-7383 Si usted tiene preguntas o preocupaciones con respecto a la manera en que se esta llevando a cabo el estudio, usted puede comunicarse con el Dr. Steve Davis, director del comité de sujetos humanos de Cal Poly, al (805) 756-2754, sdavis@calpoly.edu, o con la Dra. Susan Opava, decana de investigación y programas graduados, al (805) 756-1508, sopava@calpoly.edu.

Si su hija esta de acuerdo en participar voluntariamente en este proyecto de investigación según lo descrito, indique por favor su aprobación y el consentimiento de su hija, firmando los dos abajo. Guarde por favor una copia de esta forma para su referencia, y gracias por su participación en este

Nombre de la niña participante	Fecha
Firma del Padre	Fecha
Persona de contacto de emergencia	Número de teléfono
Firma del Investigador	Fecha

APPENDIX C

Circular for Participant Recruitment (English and Spanish)

Pink Chefs Cooking Class for Girls!!!

Sign up for this *exciting* new
6 week program.

Program meets: November 3-December 11
Mondays & Wednesdays @ 2:30-4:30

Cal Poly students join the
Bright Futures After School
program at Mesa Middle School.

*Learn nutrition education
through cooking classes.*

Orientation Meeting:
Wednesday, October 29th
@ 2:30 pm

Contact Information

Contact: Michelle Hoffmeister

Phone: (805) 540-9757

E-mail: mhoffmeister@sloymca.org

With Chef Julie Chessen

COPE@calpoly.edu

Free
Prizes
Every
Week!

Sponsored by:

- Cal Poly Building Better Bodies
- Arroyo Grande Community Hospital
- Food Bank Coalition of San Luis Obispo County
- Bright Futures After School Program
- Latino Outreach Council

CAL POLY

Building Better Bodies

Pink Chefs

¡¡¡Clases de cocinar para chicas!!!

Inscribense a este Nuevo *emocionante*
programa de seis semanas.

El Programa encuentra: Noviembre 3-Diciembre 11
Los Lunes & Los miércoles @ 2:30-4:30

¡*Cal Poly* los estudiantes unen
los Futuros Brillantes después
De programa de Escuela
en Colegio de Mesa!

Aprenda la educación de nutrición
por cursos de cocina.

La Reunión de la orientación:
El miércoles, 29 de octubre
@ 2:30 pm

Contacte Información

Contacte: Michelle Hoffmeister

Teléfono: (805) 540-9757

E-mail: mhoffmeister@sloymca.org

Con Cocinera Julie Chessen

COPE@calpoly.edu

Patrocinado Por:

- Cal Poly Building Better Bodies
- Arroyo Grande Community Hospital
- Food Bank Coalition of San Luis Obispo County
- Bright Futures After School Program
- Latino Outreach Council

CAL POLY

Building Better Bodies

APPENDIX D

Circular for Volunteer Recruitment

Kids Cooking Class Needs Volunteers!!!

Pink Chefs and **Dude Chefs** is designed to provide middle school kids with the knowledge and skills needed to prepare meals at home.

We are looking for local volunteers to assist in the start up phase of this new program led by Julie Chessen, Program Coordinator & Nutrition Educator.

Scheduled Classes:

Dude Chefs	Tuesdays & Thursdays @ 2:30-4:30
Pink Chefs	Wednesdays & Fridays @ 2:30-4:30

Where:

Mesa Middle School
2555 Halcyon Rd., Arroyo Grande

Volunteers will —

- Guide participants through web-based programs
- Create & Facilitate games/activities
- Develop & Implement lesson plans
- Collect donations
- Help with food preparation

**Great
RESUME
Builder!**

Contact Information:

Contact: Julie Chessen

Phone: (805) 231-1376

E-mail: jchessen@calpoly.edu

COPE Office: 43A-457

COPE, Center for Obesity Prevention and Education

Funded by:

- Cal Poly Building Better Bodies
- Food Bank Coalition of San Luis Obispo County
- Arroyo Grande Community Hospital
- Bright Futures After School Program
- Latino Outreach Council

CAL POLY

Building Better Bodies

APPENDIX E

Donation Letter and Circular

Attention:

Building Better Bodies, an emerging Center for Obesity Prevention and Education sponsored by California Polytechnic State University, San Luis Obispo, is looking for local partners to support community nutrition and exercise programs. We are hoping to increase awareness and the importance of home cooked meals, nutrition, as well as physical fitness. With our involvement in local middle schools, we hope to improve basic nutrition knowledge, increase cooking confidence, and promote healthy exercise habits.

Cal Poly requests your assistance with this program through your donation of monetary or material contribution: food, equipment, cookware, incentives for the participants, etc.

A representative will be contacting you within the next week. Any assistance that you can provide is greatly appreciated. If you have any questions regarding this program, please contact:

Dr. Ann McDermott
Phone: (805) 756-6447
E-mail: amcdermo@calpoly.edu
College of Science and Math - Kinesiology Department

Julie Chessen
Phone: (805) 231-1376
E-mail: jchessen@calpoly.edu
College of Agriculture, Food and Environmental Sciences – Food Science and Nutrition Department

Thanks in advance for considering supporting this project,

Building Better Bodies

Kids Cooking Class is in Need of Donations!!!

The **Pink Chefs** of Oceano is a program designed to provide middle school girls with the knowledge and skills needed to prepare meals at home.

We are looking for local community partners to pull together in support of starting up this new program led by Julie Chessen, Nutrition Educator.

Donation ideas to help support this unique culinary program:

- Money
- Cookware
- Gadgets
- Pantry ware
- Utensils
- Cutting Boards
- Floor mats
- Food
- Cookbooks
- Gifts for girls ages 11-13
- Disposable Cameras
- Office supplies
- Mixers, blenders, toasters
- Microwaves, etc...

ANY donation is a GREAT donation for the Oceano Community Center!

Donations to:

Contact: Dr. Ann McDermott

Phone: (805) 756-6447
amcdermo@calpoly.edu

Contact: Julie Chessen

Phone: (805) 231-1376
jchessen@calpoly.edu

California Polytechnic State University

Funded by:

- Cal Poly Building Better Bodies
- Arroyo Grande Community Hospital
- Latino Outreach Council
- Oceano Community Center, INC.
- Food Bank Coalition of San Luis Obispo County

CAL POLY

Building Better Bodies

APPENDIX F

Lesson Plans (1 through 12)

Pink Chefs

Lesson 1: Personality Pie

Age of learners: 12-14 years

Time allotted: 2 hours

General Goal(s):

- This lesson is the orientation to the “Pink Chefs” program. This lesson will establish classroom norms, create the culinary community, and introduce nutrition through cooking skills.

Specific Objectives:

- The students will state the importance of hand washing and will demonstrate food safety through proper hand washing methods.
- The students will demonstrate how to work cooperatively within a group through the pie decorating activity.

Required Materials:

Instructor needs:	Students need:	Volunteers need:
First-aid kit	Pen and pencil (1 per student)	Pies (1/2 per student)
Name tags	Piece of paper (1 per student)	Fruit
Attendance sheet	Hand soap	Cutting boards
Calendars (1 per student)	Napkins	Knives
Food safety magnet (1 per student)	Gallon zip lock bags (1 per student)	Yogurt
Questionnaires (1 per student)		Granola
Large poster board		Small disposable bowls
Markers		Dish soap
Hand washing kit		Cups
Prize (1 for winner)		Spoons
Camera		*Have the volunteers make the fruit parfaits and cut the fruit for the pie decorating contest.

Teacher Preparation:

- Prepare the pies ahead of time. In two piecrusts, split 1 box of pudding mix. This will allow for the students to decorate the pies with a generous amount of fruit. Have the volunteers make the pies. Mini-pie crusts could be substituted for regular piecrusts if the mini-pies are available.

15 min. Anticipatory Set:

Ask the students “Do you like pie? What kind of pie do you like?” Explain to the students that food can be used to express themselves. Allow the students to create a pie that would describe their personality. For example, would their pie be spicy, sweet, chocolate, mad, kick in the pants, etc. Have the students name their pie and write it down on a piece of paper with their name and pie name on it. Go around the room and have every student tell their pie story.

Step-By-Step Procedures:

- 1) Before beginning, collect all consent forms and behavior contracts. Make sure all of the students are wearing closed-toed shoes. If not, they must wear closed-toed shoes next time.
- 2) Take attendance while the students are telling their pie story. If you don’t have an attendance sheet, pass around a piece of paper for the students to sign.
- 3) Introduction: explain the program. Give a short description of the consent form.
- 4) Pass out calendars of the program and give them a food safety magnet.

5 min.

Pink Chefs

10 min.	5) Establish classroom norms/rules: a) Explain to the students what classroom norms are and give an example. For example, treat everyone with respect. b) Allow the students to brainstorm and develop the norms of the classroom. i) For example, clean up before anyone leaves. c) Write the norms up on the board, or a place where the entire class can see, and keep these rules posted in the classroom during the entire program. d) Refer to the norms when appropriate.
15 min.	6) Section #1 of the questionnaire ¹⁻³ : a) Give a brief description of the questionnaire and that it will be used for a study, but their identity will remain anonymous. b) Inform the students that there is no wrong answer and encourage questions. c) define terms: write definitions on board i) Health: body condition; good health is an equal balance of the mind, body and spirit. ii) Confidence: belief in oneself and one's power in abilities; self-sufficient. iii) Convenience: any packaged food, dish, or meal that can be prepared quickly and easily, as by thawing or heating. Ex. Macaroni and cheese d) Walk through each question with the students fully explaining each one. e) Stop after question 10.
15 min.	7) Tour of the kitchen during the short recess: a) Show the kids the stove top, ovens, preparation areas, dish washing station, etc. 8) During kitchen tour, go over the importance of hand washing. a) Sing "Happy Birthday to You," approximately 20 seconds. b) Everyone washes their hands. c) ALTERNATIVE ACTIVITY: use the commercial kit designed to demonstrate germs on hands using the UV light pen.
10 min.	9) Section #2 of the questionnaire: a) Repeat section #1 by guiding the students through each question. b) Stop after question 23.
10 min.	10) Snack time: simple, fast example: 'ants on a log'; make your own trail mix, serve with yogurt. If using plain yogurt, discuss how plain yogurt isn't plain anymore once you add fresh fruit and granola to it.
11) Discussion of students 'top three' food items to make during the program.   a) Have the students vocally list 6 food items they would like to make. b) Write these food items on a classroom board or the large poster board. c) Have the students vote on the 'top three' food choices.
10 min.	12) Section #3 of the questionnaire: a) Guide students through each question. b) Finish the questionnaire.
30 min.	13) Pie contest: a) Each student will be given a portion of a pie (1/2 a pie or mini-pies). b) Each group of students will be given sliced fruit already prepared by the helpers/volunteers. c) The students will decorate their portion of a pie with the fruit. d) While students are decorating pies, make sure questionnaires are filled out properly (allergies, age, etc.). e) The instructor and volunteers will vote for the best decorated pie. f) The winner of the pie contest will receive a prize. g) All of the students will take their decorated pie home. h) Take pictures of each student with their decorated pie and the name of their pie. Pictures are to help memorize names and they also can be used for the scrapbook. i) Clean up.

Plan for Independent Practice:

- Pie decorating with fruit; hand washing; use plain yogurt in recipes.

Pink Chefs

Closure:

- What did you learn?
- What are you going to tell your family that you learned? (Have students share)
- The yogurt parfait is a good, healthy snack that is simple to make and takes no time to prepare.

Chef Challenge:

- Try singing 'Happy Birthday to You' at home when you wash your hands. Get a family member to wash hands and sing with you.

Did you follow the session plan with discussion points? YES / NO

Did you make any alterations to the session plan? YES / NO

If yes, what were these?

Were there any problems with the session?

Do you have any further comments about the session?

¹Food Standards Agency. (2005). Pre-intervention Questionnaire for Cooking Skills Programmes. Accessed: September 21, 2008.
<http://www.food.gov.uk/multimedia/pdfs/preintercookingskillsq.pdf#page=1>

²Nutrition Quest. Fat Screener. Accessed: September 21, 2008.
http://www.nutritionquest.com/freetools/fat_screener.htm

³Nutrition Quest. (n.d.). Fruit, Vegetable, and Fiber Screener. Accessed: September 21, 2008.
http://www.nutritionquest.com/freetools/fv_screener.htm

Pink Chefs

Attendance Sheet

[illegible]

PINK CHEFS: NOVEMBER 2008!!

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3 Pink Chefs @ 2:30	4	5 Pink Chefs @ 2:30	6	7	8
9	10 Pink Chefs @ 2:30	11	12 Pink Chefs @ 2:30	13	14 Pink Chefs @ 2:30	15
16	17 Pink Chefs @ 2:30	18	19 Pink Chefs @ 2:30	20	21	22
23	24 Pink Chefs @ 2:30	25	26 NO SCHOOL	27	28 NO SCHOOL	29

COOKING IS COOL!!

Contact: Chef Julie Chessen

Phone #: (805) 231-1376

E-mail: jchessen@calpoly.edu

CAL POLY

Building Better Bodies

The purpose of this study is to improve your child's confidence for cooking and to teach your child menu planning, food buying and food preparation skills.

PINK CHEFS: DECEMBER 2008!!

Sun	Mon	Tue	Wed	Thu	Fri	Sat
30	1 Pink Chefs @ 2:30	2	3 Pink Chefs @ 2:30	4	5	6
7	8 Pink Chefs @ 2:30	9	10	11 Family Fiesta!!!	12 Focus Group @ 2:30	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

COOKING IS COOL!!

Contact: Chef Julie Chessen

Phone #: (805) 231-1376

E-mail: jchessen@calpoly.edu

CAL POLY

Building Better Bodies

The purpose of this study is to improve your child's confidence for cooking and to teach your child menu planning, food buying and food preparation skills.

PERSONALITY PIE

Ingredients:

• 1 box of vanilla pudding	• 1/4 cup of grapes
• 2 graham cracker pie crust	• 1 banana, sliced
• 1/4 cup of strawberries, sliced	• 1/4 apple, sliced

Directions:

- 1) Make pudding according to directions on box. Set aside to cool.
- 2) Once cooled, split pudding into the 2 pie crusts.
- 3) Decorate with fruit. Enjoy!!!

****Use seasonal fruit!!!***

Winter: blood oranges and cranberries

Spring: cherries and blueberries

Summer: peaches and strawberries

Fall: apples and pears

CAL POLY

Building Better Bodies

1 cup of fruit = 1 serving

YOGURT PARFAIT

Ingredients:

- 1/2 cup of plain yogurt
- 1/4 cup of granola
- 1/4 cup strawberries, diced

Mooo!! Got
Yogurt??

Directions:

1) Add all the ingredients together. Mix.

Now it's not plain yogurt anymore!!! Eat as a snack. Enjoy!

**Instead of strawberries, try
another fruit like peaches.*

CAL POLY
Building Better Bodies

1 cup of yogurt = 1 serving of dairy

Pink Chefs

Lesson 2: How to Read a Recipe

Age of learners: 12-14 years

Time allotted: 2 hours

General Goal(s):

- This lesson teaches students how to properly extinguish a kitchen fire, how to properly read and follow a recipe, how to correctly identify the measurement tools needed for the recipe, and how to execute a recipe while working in groups.

Specific Objectives:

- The students will demonstrate how to properly extinguish a cooking fire by instruction from the local fire department (safety protocol).
- The students will practice measurement terms through the identification of measurement tools.
- The students will practice measurement methods through the use of selected measurement tools to measure ingredients.
- The students will demonstrate how to read and follow a recipe through baking muffins.
- The students will demonstrate cooperative learning skills through working in groups.

Required Materials:

Instructor needs:	Students need:	Volunteers need:
First-aid kit	Apron and hairnet (1 per student)	Fruit – washed, sliced, and placed in bowls
Camera	12 muffin tin (1 per group)	Granola – placed in a bowl w/ spoon
Classroom rules	Paper liners for muffin tin	Plain yogurt
Poster board	Large mixing bowl (1 per group)	Cups, spoons
Markers	Small mixing bowl (1 per group)	*Have the volunteers set up a separate work station for ingredients, the instructor and each group. Place a cutting board with a non-slip liner underneath. Place a recipe and a clean up responsibility at each station. Also, have the volunteers place the student's materials needed for the lesson at each station. This exercise will be repeated for the entire program.
Recipe (1 per student, 1 per group)	Fork (1 per group)	
Clean Up Responsibility (1 per group)	Mixing spoon (1 per group)	
Measurement handout (1 per student)	Ziploc bag (1 per student)	
Various measurement tools (tbsp, tsp, cup, ½ cup, etc.)	Cutting board (1 per group)	
1 Egg, 1 bowl, 1 fork	Non-slip liner (1 per group)	
1 Measuring cup, blueberries		
Salt		
Nonstick cooking spray		
Muffin tin		

Teacher Preparation:

- Contact the local Fire Department; coordinate to have them come to the site to discuss and demonstrate how to properly extinguish a fire. Make sure the site supervisor is aware of the Fire Department arrival.
- Have the volunteers prepare the fruit; place in bowls so students can make their own parfait.
- Read about blueberries and the nutritional benefits.
- Print a copy of the recipe and measurement handout for each student as a handout.
- Print a copy of the clean up responsibilities. Use these responsibilities throughout the program.

20 min. | **Anticipatory Set:**
Fire Department demonstration.

Pink Chefs

10 min.	Step-By-Step Procedures: <ol style="list-style-type: none">1) Before class begins, have the students take a 5 minute bathroom break to wash their hands.2) Take attendance.3) Go over any issues:<ol style="list-style-type: none">a) Consent forms: Were all of the consent forms marked for picture taking?b) Questionnaires: Did all of the students mark whether or not they had food allergies?c) Add any rules to the list. For example, we work as a team and help everyone clean up until the job is done.
5 min.	<ol style="list-style-type: none">4) Have a short discussion about the lesson last week.<ol style="list-style-type: none">a) Pies last week: What did their families think? Did they like it?b) Hand washing: Did they tell their families about singing 'Happy Birthday' during hand washing?c) Fruit parfait: Did they make a fruit parfait at home? Did they use plain yogurt in any recipes?
5 min.	<ol style="list-style-type: none">5) SNACK: The students will make the fruit parfaits from the last class.
10 min.	<ol style="list-style-type: none">6) Pass out the "Berry Tasty Muffin" recipe to each student.¹7) When have you used recipes? How have you used recipes? What information do you find in a recipe?8) Explain what a recipe is:<ol style="list-style-type: none">a) The recipe name tells you what you will be making.b) The very first step to cooking is to scan the recipe all the way through:<ol style="list-style-type: none">i) Become familiar with the recipeii) Gather all the measurement tools needed for the recipeiii) Gather all the ingredients needed for the recipe9) Parts of a recipe:<ol style="list-style-type: none">a) Servings:<ol style="list-style-type: none">i) The number of servings will tell you how many people the recipe will feed.ii) It is important to know how many people the recipe will serve.iii) For example, if the recipe serves eight and you have a family of four, you can cut the amount of each ingredient by half in order to make the appropriate amount for your family (unless you love leftovers!).b) Ingredients:<ol style="list-style-type: none">i) The "ingredients" list the <u>name</u> and the <u>measurement</u> of each item in the recipe.ii) Most recipes list the ingredients in the order in which they are used.iii) When making a recipe at home, it is a good idea to read the recipe a few hours ahead of time to determine the ingredients you already have and the ingredients you need to purchase at a grocery store.iv) Some ingredient lists describe what needs to be done to each ingredient before following the directions. EXAMPLES (write these examples up on a board and demonstrate each one):<ol style="list-style-type: none">(1) one egg, beaten(2) 1 cup of blueberries, washedv) In some recipes, there will be an ingredient without a specific measurement. EXAMPLES (write examples on a board and demonstrate each one):<ol style="list-style-type: none">(1) pinch of salt, or salt to taste(2) nonstick sprayc) Time:<ol style="list-style-type: none">i) Time tells you about how long it will take to prepare the recipe. This is good to know because then you will know how much time you will need. If you are making dinner, you will know how early you should start making it.ii) What do you think is the difference between "prep" and "cook" time?iii) Sometimes, recipes will provide two different time designations:<ol style="list-style-type: none">(1) "Prep time" – how long it should take to prepare the dish. This can include washing the vegetables, mixing, stirring, and cutting.(2) "Cook time" – how much time it will take to simmer, stir-fry, bake, or broil once you've finished the preparation.

Pink Chefs

10 min.	10) Practice with measurements a) Pass out handout for cooking measurements and terms for practice! ²⁻³ b) Go through cup measurements, teaspoon measurements, tablespoon measurements, etc. Show examples of each measurement. c) Split the class up into groups (ideal group size: 3-4) and allow the students to identify the measurement tools in each group.
40 min.	11) Kitchen demonstration: a) Show the students how to measure flour. b) Explain why to fill the muffin tins with mix 2/3 of the way; expanding.
20 min.	12) Recipe: Berry Tasty Muffins ¹ 13) Divide the leftovers. Clean up!!

Plan for Independent Practice:

- Preparing a plain yogurt parfait at home for their families, following a recipe

Closure:

- Tell your family how to properly extinguish a kitchen fire. Write the rules down on a piece of paper and hang it up on your refrigerator.

Chef Challenge:

- Instruct a family member on how to read a recipe properly.

Did you follow the session plan with discussion points? YES / NO

Did you make any alterations to the session plan? YES / NO

If yes, what were these?

Were there any problems with the session?

Did the students correctly read and follow the recipe?

Do you have any further comments about the session?

¹Nemours Foundation. (2003). Kids Health: Berry Tasty Muffins. Accessed: May 7, 2008.
http://kidshealth.org/kid/recipes/recipes/berry_muffins.html

²Cook's Dictionary. Cooking Terms and Definitions. Accessed: September 21, 2008.
<http://www.recipestoday.com/articles/cookingorganization/cooks-dictionary-955/>

³Breakfast and Brunch Recipes. Baking Weights and Measurements. Accessed: September 21, 2008.
<http://www.breakfast-and-brunch-recipes.com/bakingweightsandmeasures.html>

Recipe Measurements and Terms

Abbreviations:	Measurements:
tsp (t)	teaspoon
tbsp (T)	tablespoon
fl	fluid
oz	ounce
pkg	package
c.	cup
lb	pound
sm	small
med	medium
lg	large
min.	minutes
approx.	approximately

Terms used in Cooking:

- Bake:** To cook in an oven.
- Beat:** To stir a mixture using rapid, regular motions, use a wire whisk spoon, hand beater or mixer.
- Blend:** To mix two or more ingredients thoroughly.
- Boil:** To cook in a liquid that is at boiling temperature.
- Broil:** To cook by direct heat on a rack.
- Chop:** To cut into small pieces with a knife, blender, or food processor.
- Cube:** To cut food into small cubes.
- Cut:** To divide food with a knife or scissors.
- Dice:** To cut into small pieces.
- Fold:** To combine one ingredient with another by gently turning the mixture with a spoon.
- Glaze:** To coat with a glossy mixture that adds flavor and appearance.
- Grate:** To produce pieces of a specific size by rubbing food on a grater.
- Grease:** To rub the surface of a pan or dish with butter/oil to prevent food from sticking.
- Mince:** To chop into very small pieces.
- Pare:** To cut off the outside covering such as skins of fruits or vegetables.
- Peel:** To remove the outer covering of foods.
- Roast:** To cook uncovered in an oven.
- Sauté:** To cook in a small amount of fat.
- Simmer:** To cook food over low heat in a liquid just below the boiling point. Bubbles will form slowly and break apart just below the surface.
- Steam:** To cook in steam over boiling water in a closed container.
- Stir:** To mix ingredients with a circular motion.
- Stir-fry:** To fry thinly sliced food quickly in only a little oil, continuously stirring in a tossing motion.

Created by Shelley Matson

CAL POLY

Building Better Bodies

BERRY TASTY MUFFINS

Ingredients:

• 1 c. flour		• 1 c. blueberries, washed
• 1 c. oatmeal		• 1 egg, beaten
• 3 tbsp. sugar		• 1 c. milk
• 1 tsp. salt		• 1/4 c. vegetable oil
• 4 tsp. baking powder		• Nonstick spray

Prep Time: 20 minutes
Cook Time: 20 minutes
Servings: 12 muffins

Directions:

- 1) Preheat oven to 400 degrees Fahrenheit (200 degrees Celsius).
- 2) In a large bowl, mix together the flour, oatmeal, sugar, salt, and baking powder. After stirring the dry ingredients, mix in blueberries.
- 3) In another bowl, break the egg and use a fork to beat it just a few times. Then add the milk and vegetable oil, and mix.
- 4) Add the wet mixture to the dry mixture in the large bowl.
- 5) Using a mixing spoon, mix about 25-30 times. Don't mix too much! Your muffin mixture should be lumpy, not smooth.
- 6) Line a muffin tin with paper liners and lightly spray with nonstick spray. Spoon in the muffin mix. Fill each cup about 2/3 of the way up.
- 7) Bake for about 20 minutes. Clean up while waiting for the muffins.
- 8) When muffins are finished, remove from muffin tin and let cool. **Enjoy your berry tasty muffins!!! Try spreading jelly.**

***Adding oatmeal to a recipe will increase the amount of fiber. Blueberries are high in antioxidants.**

1 muffin = 1 gram of fiber

Clean up Duties

Demonstration Table & Classroom

CAL POLY

Building Better Bodies

Clean up Duties

"How else am I supposed to afford gas for my SUV?"

Dish Washing

CAL POLY

Building Better Bodies

Clean up Duties

Dry Dishes & Put Away

CAL POLY

Building Better Bodies

Clean up Duties

Wipe Countertops,
Sweep Floors, &
Take Out Trash

CAL POLY

Building Better Bodies

Clean up Duties

Recycle

Clean up Duties

Trash

Pink Chefs

Lesson 3: Cutting Edge

Age of learners: 12-14 years

Time allotted: 2 hours

General Goal(s):

- This lesson teaches students the rules regarding knife responsibility, how to properly use a knife, and how to store the knife when not in use.

Specific Objectives:

- The students will demonstrate proper knife handling procedures through modeling the skill to other students.
- The students will demonstrate and practice knife safety skills (including chopping, dicing, and slicing) through modeling the skills to other students.
- The students will describe the importance of washing produce and demonstrate through washing fruits and vegetables.

Required Materials:

Instructor needs:	Students need: groups of 3	Volunteers need:
First-aid kit	Apron, hair net (1 per student)	Prepare the couscous w/ vegetable stock according to package
Camera	Cutting board (1 per group)	1 Large pot with lid
Classroom rules	No skid shelf liner (1 per group)	Pot holders
Poster board	Knife (1 per group)	1 Spatula
Markers	Towel (1 per group)	*Have the volunteers set up a separate work station for ingredients, the instructor and each group. Place a cutting board with a non-slip liner underneath. Place a recipe and rotate the clean up responsibility at each station. Also, have the volunteers place the student's materials needed for the lesson at each station. This exercise will be repeated for the entire program.
Recipe (1 per group)	Colander (1 per group)	
Clean Up Responsibility (1 per group)	Large bowl (1 per group)	
Projector	Spoon (1 per student)	
Laptop computer	Plastic spoons for tasting	
Kitchen Knives handout (1 per student)	Tupperware (1 per student)	
Classroom snack (seasonal fruit or vegetable) & drink		

Teacher Preparation:

- Read about the different knives for discussion during the "Kitchen Knife" handout. Bring in examples of the knives for show and tell. If available, bring in a sharpening stone to demonstrate how to sharpen a knife as well as a steel (honing tool).
- Read about the nutritional qualities of the daily seasonal snack for discussion. For example, if you introduce pumpkin seeds, talk about how it boosts your immunity.

5 min.

Anticipatory Set:

Show a short clip of proper knife handling: "Alton teaches the basics of safe knife use."¹

5 min.

Step-By-Step Procedures:

- 1) Make sure the students take a bathroom break before the lesson begins.
- 2) SNACK: Bring seasonal fruit and water or juice. Briefly discuss the nutritional qualities of the snack.
- 3) Have a short discussion about the last lesson.
 - a) Fire extinguishing procedures: Did you tell your families about the Fire Department? Did you tell them how to properly extinguish a fire?

Pink Chefs

5 min.	b) Muffins: What did their families think? Did they like it? Did you try toasting the muffin and putting jelly on it? c) Recipes: Did you try following a recipe at home? If so, what?
5 min.	4) Create classroom rules for knife use. For example, no swinging the knife around. If the knife is not in use, it is placed on the cutting board. a) ALTERNATIVE ACTIVITY: split the students into groups. Have them develop rules and write the rules down on a piece of paper. Then share with the entire group. b) Create poster board with agreed upon rules. Post for each class.
30 min.	5) Show a short clip of proper knife storage: “Alton instructs on proper knife handling and care.”² 6) HANDOUT: Kitchen Knives³ a) Tyler Florence describes what to look for in a good knife (short clip).⁴ b) Explain the importance of a sharp knife. i) Demonstrate using a steel to align the steel fibers of the knife during cooking sessions. c) ALTERNATIVE ACTIVITY: Bring all the knives listed on the handout. While discussing each of the knives functions, pass around an example of the knife being discussed. Don't forget to discuss knife passing etiquette (just like scissors). If able to, demonstrate how to sharpen a knife using a stone and how to hone a knife using a honing steel. d) ALTERNATIVE ACTIVITY: Bring descriptions and pictures of the knives discussed in class. Tape the description up on a board in the front of the classroom and have each student place the picture with the correct description.
10 min.	7) Kitchen demonstration: knife skills a) Before demonstrating the knife skills, go over the importance of washing produce; food safety procedures. b) Knife Skills: first general knife skills and then do the three methods: chop, dice, slice i) To hold your chef's knife properly, grasp the handle with three fingers and put your forefinger and thumb on opposite sides of the blade. ii) With a rocking motion, keeping the tip of the knife on the chopping board, slice down through the vegetables at regular intervals, using the full length of the knife. iii) Use your other hand to feed the vegetables toward the knife. To do this safely, curl your fingers in and use your fingertips to grasp and move the food. iv) Optional: have the students demonstrate this technique with “air” knives, similar to “air” guitar. v) Skills: model cutting all the vegetables used in the CousCous Salad recipe. (1) Chop parsley: To chop means to cut foods into pieces. (a) This is a larger cut than dice or mince and generally does not need to be uniform. To chop vegetables, first trim the stem and peel if necessary. (2) Dice tomato: To dice means to cut into small cubes. (3) Slice cucumber: To slice means to cut into thin flat pieces. Demonstrate how to seed the cucumber.
40 min.	8) Split the students into groups based on the number of knives and cutting boards (2-3 students per cutting board). a) Have each group wash their fruits and vegetables for the recipe and bring back to their stations. 9) Have one student from each group model the techniques to the other group members. a) Repeat step 11 for chop, dice, and slice until each student has modeled all the skills. 10) Have each group make the recipe. a) Taste food – mmmmm! b) Split up to bring home and put in Tupperware. Remind students to bring back the Tupperware for the next class.
20 min.	11) Clean up!!

Plan for Independent Practice:

- Knife chopping, dicing, and slicing skills; washing of produce

Pink Chefs

Closure:

- What did you learn?

Chef Challenge:

- Go home and teach someone in your family how to properly use and store a knife, with parental supervision or permission.

Did you follow the session plan with discussion points? YES / NO

Did you make any alterations to the session plan? YES / NO

If yes, what were these?

Did each student model the skills to the other students using the proper knife technique?

Were there any problems with the session?

Do you have any further comments about the session?

¹Good Eats (Food Network). (21 September, 2008). Alton teaches the basics of safe knife use. Podcast retrieved from the Food Network:
http://www.foodnetwork.com/food/ck_cg_knives/text/0,3100,FOOD_27636_53050,00.html

²Good Eats (Food Network). (21 September, 2008). Alton instructs on proper knife handling and care. Podcast retrieved from the Food Network:
http://www.foodnetwork.com/food/ck_cg_knives/text/0,3100,FOOD_27636_53050,00.html

³Wikipedia, the free encyclopedia. (2008) Kitchen knife. Accessed: May 8, 2008.
http://en.wikipedia.org/wiki/Kitchen_knife

⁴Food 911 (Food Network). (21 September, 2008). Tyler describes what to look for in a good knife. Podcast retrieved from the Food Network:
http://www.foodnetwork.com/food/ck_cg_knives/text/0,3100,FOOD_27636_53050,00.html

CAL POLY

Building Better Bodies

Kitchen Knives

How to Select a Knife:

- 1) **Best Quality:** A well-made tool enhances the entire process.
- 2) **Function:** What will you be using the knife for?
- 3) **Weight:** Varies with the blade size; a chef knife should have heft to make it easier for chopping.
- 4) **Maintenance:** Always maintain your tool; a sharp knife is safer than a dull knife.

Types of Knives:

Chef's Knife: Also known as the Cook's knife, is an all-purpose knife used for many functions in the kitchen (chopping, slicing, dicing, mincing, etc.)

Cleaver: Large rectangular knife used for cutting meat. The blade is very heavy with a thick spine enabling the knife to chop through bone and joints very easily.

Serrated Knife: Also known as a Bread knife, have a wavy, scalloped, or saw-like blade. This knife is ideal for things that are hard on the outside and soft on the inside (bread or tomatoes).

Honing Steel: Not a sharpener! This tool straightens the blade while a sharpener sharpens the blade. It is used after sharpening to restore the edge and improve cutting ability.

Paring Knife: A small knife with a plain edge blade that is ideal for peeling and other small intricate work (cutting small garnishes).

Boning Knife: Used to remove bones from cuts of meat. They have a thin, flexible blade, that allows them to get into small spaces.

CAL POLY

Building Better Bodies

COUSCOUS SALAD

Ingredients:

• Couscous, use vegetable stock instead of water	• 1 lemon, juiced
• 1 tomato, diced	• 3 Tbsp. of olive oil
• 1 cucumber, sliced	• Salt, to taste
• 1/2 cup of fresh parsley, chopped	• Pepper, to taste

Directions:

- 1) Prepare couscous according to directions on the package. Set aside to cool.
- 2) In large mixing bowl, add tomato, cucumber, and parsley. Add lemon juice and olive oil.
- 3) Add 2 cups of couscous into the mixing bowl.
- 4) Season with salt and pepper. Mix well. Serve chilled. Enjoy!!!

**Remember, you can always add,
but you can not take away.*

CAL POLY
Building Better Bodies

1 serving of grains = 1/2 cup of couscous

Pink Chefs

Lesson 4: Build Your Pyramid

Age of learners: 12-14 years

Time allotted: 2 hours

General Goal(s):

- This lesson teaches students how to build their pyramid for healthy eating, with an emphasis on balance among food groups. Students will compare what they typically eat in one day to the MyPyramid food guidance system, and learn about the link between their eating habits and their physical and mental health.

Specific Objectives:

- The students will explain how their eating habits affect their physical and mental health.
- The students will explain why nutrition experts chose a pyramid to illustrate healthy eating recommendations.
- The students will identify food groups in the *MyPyramid* Guide.
- The students will build their pyramid through the practical application of the culinary session.
- The students will solidify their ability to chop, dice, and slice through repetition.

Required Materials:

Instructor needs:	Students need:	Volunteers need:
First-aid kit	Apron, hair net (1 per student)	If whole roasted chickens were purchased, have the volunteers remove the chicken from the skin and bone.
Camera	Towel (1 per group)	*Have the volunteers set up a separate work station for ingredients, the instructor and each group. Place a cutting board with a non-slip liner underneath. Place a recipe and rotate the clean up responsibility at each station. Also, have the volunteers place the student's materials needed for the lesson at each station. This exercise will be repeated for the entire program.
Classroom rules	Cutting board (1 per group)	
Recipe (1 per group)	No skid shelf liner (1 per group)	
Clean Up Responsibility (1 per group)	Measuring spoons (1 per class)	
Laptop	Measuring cups (1 per class)	
Projector	Chef knife (1 per group)	
Classroom snack (seasonal fruit or vegetable) & drink	Serrated knife (1 per group)	
MyPyramid for Kids handout (1 per student)	Spatula (1 per group)	
MyPyramid worksheet (1 per student)	Whisk (1 per group)	
Serving Size handout (1 per student)	Mixing bowl (1 per group)	
	Small bowl (1 per group)	

Teacher Preparation:

- Read the background information at the end of “Jump Start Teens: The ABCs of Healthy Eating” from California Project Lean.
- Read some nutritional information regarding the daily snack served.
- Pre-measure serving sizes of cereals, fruits, vegetables, and other foods.
- Bring examples of fats (butter, margarine, oil, etc.).

Pink Chefs

5 min.	Anticipatory Set: Go through the Portion Distortion Interactive Quiz I with the class. ¹ Do you know how food portions have changed in 20 years? ALTERNATIVE ACTIVITY: Follow #1 of the Activity Steps from “The ABCs of Healthy Eating.”
1-2 min.	Step-by-step Procedure: 1) SNACK: pass out the daily snack. Briefly discuss the snack’s nutritional benefits. 2) Have a brief discussion about the couscous salad. Did their families like it?
3 min.	3) Use “The ABCs of Healthy Eating” as a guide for the lesson: ² a) HANDOUT: pass out the MyPyramid for Kids handout. ³ b) Review the different sections of the MyPyramid: i) Activity: What does this mean to you? What demonstrates activity on the MyPyramid? ii) Variety: What does this mean to you? iii) Moderation: What does this mean to you? iv) Proportionality: after explanation, ask the students to explain proportionality in their own words. v) Personalization: after explanation, ask the students to explain proportionality in their own words. vi) Gradual Improvement: after explanation, ask the students to explain proportionality in their own words.
10 min.	4) Pass out the serving size handout ² a) Lead a discussion on the 5 food groups. i) Pass around the serving size examples. ii) Discuss oils, fats, and discretionary calories.
20 min.	5) ACTIVITY: Pass out the MyPyramid worksheet. ⁴ a) Have the students write down everything that they ate yesterday (including beverages) and any physical activity they did. b) Do the cheeseburger example on the board (The ABCs of Healthy Eating). c) Allow the students time to classify the foods that they recalled on the worksheet. d) Have a short discussion about what they consumed. Did they eat more or less than they thought? Are the serving sizes smaller than they expected?
10 min.	6) Demonstrations in the kitchen (have students model each of these skills for the class) a) Chop: dill and parsley b) Dice: celery c) Slice: scallion and tomato
50 min.	7) Make the recipe!
20 min.	8) Divide the leftovers. Clean up!

Plan for Independent Practice:

- Choosing foods to create a well-balanced meal; using serving sizes

Closure:

- What did you learn?
- Go over the food groups used in the recipe. Was any food group missing?

Chef Challenge:

- Challenge the students to commit to 3 consecutive days of physical activity.
- Try to create a balanced meal using all of the food groups.

Did you follow the session plan with discussion points? YES / NO

Did you make any alterations to the session plan? YES / NO

If yes, what were these?

Pink Chefs

Were there any problems with the session?

Do you have any further comments about the session?

¹Department of Health and Human Services, National Institutes of Health. National Heart, Lung and Blood Institute: Portion Distortion. Do you know how food portions have changed in 20 years? Accessed: September 21, 2008. <http://hp2010.nhlbihin.net/portion/index.htm>

²California Project Lean. (n.d.). Jump Start Teens: The ABCs of Healthy Eating. Accessed: September 13, 2008. <http://www.californiaprojectlean.org/Assets/1019/files/JumpStartTeensLesson1.pdf>

³United States Department of Agriculture. (n.d.). MyPyramid for Kids: Eat Right. Exercise. Have Fun. Accessed: September 21, 2008. http://teamnutrition.usda.gov/Resources/mpk_poster2.pdf

⁴United States Department of Agriculture. (n.d.). MyPyramid Worksheet: Check how you did today and set a goal to aim for tomorrow. Accessed: September 21, 2008. http://www.mypyramid.gov/downloads/worksheets/Worksheet_2000_18.pdf

ABCs OF HEALTHY EATING

The ABCs of Healthy Eating

Objectives

Students will:

- Learn how their eating habits affect their physical and mental health.
- Learn why nutrition experts chose a pyramid to illustrate healthy eating recommendations.
- Identify food groups in the MyPyramid Guide.

Time Needed

50 minutes

Getting Ready

Read:

- Teacher Background Information

Make:

- *The MyPyramid Guide* overhead or use online www.mypyramid.gov
- The serving sizes chart from MyPyramid overhead or use online www.mypyramid.gov
- *MíPirámide* overhead (optional)

Have:

- Sample serving sizes of dry cereal, fruits, vegetables, etc. (optional)

Duplicate:

- *The MyPyramid Guide*
- *What is one serving?* chart from MyPyramid
- *MíPirámide Guide*
- *¿Que es una porción?* chart from *MíPirámide*

Curriculum Links

- Consumer Education
- Health
- Language Arts
- Spanish

OVERVIEW OF LESSON—This lesson teaches students the ABCs of healthy eating, with an emphasis on balance among food groups. Students will compare what they typically eat in one day to *The MyPyramid* food guidance system, and learn about the link between eating habits and their physical and mental health.

Activity Steps

1. Ask the students to stand. Ask all students who know somebody, a family member, friend, etc., who has heart disease or who has died of heart disease to sit down. Next ask students who know anyone who has cancer or who has died of cancer to sit down. Finally, ask those who know of anyone who has diabetes to sit down. (At this point, all or most of the students will be seated.) Note that poor eating habits are linked to the development of heart disease, cancer, and diabetes.

2. Discuss the following: Most teens do not believe their eating habits will affect their future health, but we know that unhealthy eating habits are linked to obesity, heart disease, stroke, high blood pressure, diabetes, and certain types of cancer. Even school-age children may have the beginning phases of heart disease. Poor eating habits can also contribute to:

- Dull and dry hair
- Pale and flaky skin
- Brittle nails
- Irritability and moodiness
- Poor concentration
- Problems with being underweight or overweight

3. Discuss the *MyPyramid Food Guidance System*, using the *MyPyramid* handout and overhead. Lead a discussion on the *MyPyramid* with the following:

■ **Why do you think health experts chose this graphic as a guide for Americans?**

(Answer: The USDA's MyPyramid food guidance system symbolizes a personalized approach to healthy eating and physical activity. It is meant to remind Americans to make healthful food choices and to be active every day. This guide debuted in 2005, and is the first food guidance system to include physical activity in its core recommendations.)

■ **What do you think all of the sections represent? (Review the different features of the MyPyramid)**

Activity: Activity is represented by the steps and the person climbing them, as a reminder of the importance of daily physical activity.

Variety: Variety is symbolized by the 6 color bands representing the 5 food groups of the Pyramid plus Oils. This illustrates that foods from all groups are needed each day for good health.

Moderation: Moderation is represented by the narrowing of each food group from bottom to top. The wider base stands for foods to choose more often (those with limited solid fats or added sugar); the narrower top area stands for foods to choose less often (those with more added sugars and solid fats).

Proportionality: Proportionality is shown by the different widths of the food group bands. The widths suggest how much food a person should choose from each group. (For example, the orange band represents grains, which should make up the biggest proportion of the diet.) The widths are just a general guide, not exact proportions.

Personalization: Personalization is shown by the person on the steps and the slogan "MyPyramid: Steps to a Healthier You"

Gradual Improvement: The Slogan, "Steps to a Healthier You", suggest that individuals can benefit from taking small steps to improve their diet and lifestyle each day.

■ **Review the different food groups:**

Using the Serving Size Overhead and Serving Size Handout, lead a discussion on the 5 food groups. *(If available, pass around examples of pre-measured serving sizes of cereals, fruits, vegetables, and other foods. The serving sizes should be based on the My Pyramid's recommended serving sizes.)*

■ **What are oils?**

(Answer: Oils are fats that are liquid at room temperature (such as oils used in cooking). Some common oils are: canola oil, corn oil, olive oil, soybean oil, sunflower oil. Foods naturally high in oils are nuts, olives, some fish and avocado. Foods that are mainly oil include mayonnaise, certain salad dressings, and tub margarine.)

■ What are fats?

(Answer: Solid Fats are fats that are solid at room temperature. Solid fats come from various animal foods and can be made from vegetable oils through a process call “hydrogenation”. Common solid fats are: butter, chicken fat, stick margarine, shortening, and pork fat (lard).

■ Do we need oils and fats?

(Answer: Everyone needs some fats and oils in their diet. It is best to choose unsaturated fats (those found in vegetable oils) and limit saturated fat (solid fats from animal sources and/or from vegetable oils that have been hydrogenated).

Discuss Discretionary Calories: These are extra calories individuals choose to eat or drink that are above their essential nutrient needs.

■ What kinds of foods would fit into “discretionary” calories?

(Answer: Higher fat and/or higher sugar foods such as, butter, sauces, gravies, sugar, syrup, candy, soda and other sweetened drinks, whole milk, sweetened cereals, sweetened yogurt, cookies, and cakes, etc. In general, discretionary calories or “extra” calories should should be between 100-300 calories per day. If someone is physically active, this may be more.)

The servings recommended are based on a 2000 calorie diet

■ Does everyone need 2000 calories per day?

■ What if you need more calories?

■ What if you need less calories?

(Answer: If you need more or less than 2000 calories per day, you will need more or fewer servings in each of the food groups. The number of daily servings needed from each food group depends on a person’s size, age, gender, activity level, and growth needs.)

For a plan that is specific to their needs, students can log onto www.mypyramid.gov, enter their age, gender, and activity level and get a plan that reflects their calorie needs.

4. Ask students to write down on a piece of paper everything they ate yesterday, (including what they drank) and any physical activity they did. Have students identify the food group each food or drink represents using MyPyramid, or you can use the *Food Tracking Worksheet* from www.mypyramid.gov to classify the foods consumed. Following are some helpful hints:

A cheeseburger falls into—

Meat, Poultry, Dry Beans, Fish, Eggs, and Nuts group because of the hamburger patty.

Milk, Yogurt, and Cheese group because of the cheese.

Oils because of the mayonnaise or special sauce.

Bread, Cereal, Rice, and Pasta group because of the bun.

Discuss how students' eating and physical activity habits stack up against *The MyPyramid Food Guidance System*. Are there any food groups that students failed to eat from? (The typical person eats too few fruits and vegetables, and adolescents typically fail to eat enough foods from the **Milk, Yogurt, and Cheese Group**). What food groups did students get enough servings in? Did most students get the recommended 60 minutes of physical activity per day? Approximately how many calories did students get from "discretionary" calories?

Please note, this activity does not focus on specific serving sizes but instead emphasizes the importance of balance among food groups in a daily eating pattern. If the foods a person eats in one day tend to be from one food group more than another, it is not the end of the world. The key is to try to include foods from all food groups throughout the week.

Extensions

- **Optional Classroom Activity:** Hold class in a computer lab and have students go online to www.mypyramid.gov and enter individualized information based on gender and age.
- **Optional Classroom Activity:** Invite school nutrition staff to class to explain how cafeteria meals reflect *The MyPyramid*.
- **Optional Family Outreach Activity:** Ask students to look at the foods they have at home and categorize them by using *The MyPyramid*. Have them determine if all food groups are represented. Or ask them to discuss what they've learned in class with their family members or caregivers. Have them write a report detailing what they found and the results of any discussions with their family members or caregivers.

Teacher Background Information

Adolescents may be surprised to learn that unhealthy eating habits and a lack of physical activity not only have a long-term effect, but also take a toll on their bodies now. Autopsies on the arteries of school-age children (who died, for example, in automobile accidents) revealed that their arteries had already started clogging.

Additionally, teens can't feel their bones becoming thinner from eating too few calcium-rich foods; yet surveys indicate teenage girls consume only half of the calcium they need to prevent osteoporosis, a disease that thins the bones, makes them brittle, and leads to 1.5 million bone fractures each year.¹

Furthermore, inadequate nutrition during childhood can have a detrimental effect on children's cognitive development and on productivity in adulthood. There is evidence that chronically undernourished children attain lower scores on standardized achievement tests, are more irritable, have difficulty concentrating and have lower energy levels.²

Making healthier food choices begins with an understanding of how to incorporate *The MyPyramid* into students' daily lives.

¹ Gass, M., Dawson-Hughes, B., (2006). Preventing Osteoporosis-Related Fractures: An Overview. *The American Journal of Medicine*, Vol. 119 (4A), 3S-11S

² Tufts University, Center on Hunger, Poverty, and Nutrition Policy, Statement on the Link Between Nutrition and Cognitive Development in Children, Tufts University, Medford, MA, 1994.

³ Quinn, D., Calvin, M., and Kushner, A. [1997]. National Research Council's New Report Recasts Dietary Requirements for Calcium and Related Nutrients. National Academy of Sciences, National Academy of Engineering.

MyPyramid

STEPS TO A HEALTHIER YOU

To find the number of servings right for you, go to www.MyPyramid.gov

Adapted from MyPyramid, the U.S. Department of Agriculture
Center for Nutrition Policy and Promotion

*Medical experts with the National Academy of Science now recommend that adolescents consume 1,300 milligrams of calcium per day. Because of this recommendation, Project LEAN recommends 3–4 servings every day from the Milk, Yogurt, and Cheese Group to help meet adolescents' calcium needs. Calcium is needed to maintain bone strength. Eighty-five percent of a person's bone structure is formed by age 14.³

MiPirámide

PASOS HACIA UNA MEJOR SALUD

Para ver las cantidades que tú necesitas, visita www.mypyramid.gov

Adaptado de MiPirámide, del Departamento de Agricultura de Los Estados Unidos

***Para Su Información:** Expertos en medicina de la Academia Nacional de Ciencias ahora recomiendan que los adolescentes consuman 1,300 miligramos de calcio cada día. Debido a esta recomendación, Project LEAN recomienda 3 a 4 porciones de leche y productos derivados de la leche cada día para ayudar a satisfacer las necesidades de calcio en los adolescentes. El calcio es necesario para el fortalecimiento de los huesos. El ochenta y cinco por ciento de la estructura ósea está formada a la edad de 14 años.³

What is One Serving?

Grains 6–10 ounces per day (bread, cereal, rice, pasta)	Vegetables 2 1/2–4 cups per day	Fruits 1 1/2–2 1/2 cups per day	Milk 3–4* cups per day	Meat & Beans 5–7 ounces per day
<i>Measured in ounces</i>	<i>Measured in cups</i>	<i>Measured in cups</i>	<i>Measured in cups</i>	<i>Measured in ounces</i>
Choose whole grains	Eat a variety and include dark green veggies, orange veggies and include dry beans and pintos.	Eat a variety. Choose fresh, frozen, canned or dried. Go easy on juice.	Choose fat-free or low-fat.	Choose low-fat or lean meats and poultry.
1 ounce is equal to: 1 slice bread 1 cup breakfast cereal 1/2 cup rice 1/2 cup pasta 1/2 cup cooked cereal	1 cup is equal to: 1 large baked potato or sweet potato 2 cups lettuce (romaine, spinach, iceberg)	1 cup is equal to: 1 medium mango 1 large banana 1 medium apple Medium bunch of grapes 2 plums	1 cup is equal to: 1 cup milk, soy milk, rice milk 1 cup yogurt 1/3 cup shredded cheese or 1 1/2 ounces of hard cheese	1 ounce is equal to: 1/4 cup of beans 1 ounce of cooked meat, fish, poultry 3–4 pieces of shrimp 3 thin slices of cold meat 10–12 almonds or cashews
	1/2 cup is equal to: 1/2 cup corn or 1/2 cob of corn 1/2 cup raw veggies (such as carrots, celery, broccoli) 1/2 cup green beans 1/2 cup tomatoes 1/2 cup tomato juice	1/2 cup is equal to: 1/2 grapefruit 1 small orange 1/2 cup 100% juice 1 peach 1/4 cup raisins 1/2 cup strawberries, blueberries, raspberries 1 kiwi 1/2 cup canned fruit	1/2 cup is equal to: 1/2 cup pudding (made with milk) 1/2 cup frozen yogurt	
Find a Balance Between Food and Physical Activity. <ul style="list-style-type: none"> Be physically active for at least 60 minutes most days of the week. 		Know the limits on fats, sugars and salt (sodium). <ul style="list-style-type: none"> Make most of your fat sources from fish, nuts and vegetable oils. Limit solid fats like butter, stick margarine, shortening, and lard, as well as foods that contain these. Check the Nutrition Facts label to keep saturated fats, trans fat, and sodium low. Choose food and drinks low in added sugars. Added sugars contribute calories with few, if any, nutrients 		

*Reflects 1997 National Academy of Sciences calcium guidelines for adolescents.

Adapted from MyPyramid.gov, the U.S. Department of Agriculture, Center for Nutrition Policy and Promotion

¿Que es Una Porción?

Granos 6–10 onzas al día (pan, cereal, arroz, pasta)	Verduras 2 1/2–4 tazas al día	Frutas 1 1/2–2 1/2 tazas al día	Productos Lácteos 3–4* tazas al día	Carnes Y Frijoles 5–7 onzas al día
Medido en onzas	Medido en tazas	Medido en tazas	Medido en tazas	Medido en onzas
Escoge granos integrales todos los días	Consume una variedad incluyendo verduras de color verde oscuro, color naranja y frijoles.	Consume una variedad de frutas incluyendo frutas frescas, congeladas, enlatadas, o secas. Limita el consumo de jugos.	Escoge productos lácteos bajos en grasa o sin grasa.	Escoge carnes y aves de bajo contenido de grasa o magras.
1 onza equivale a:	1 taza equivale a:	1 taza equivale a:	1 taza equivale a:	1 onza equivale a:
1 rebanada de pan 1 taza de cereal 1/2 taza de arroz 1/2 taza de pasta 1/2 taza de avena cocida	1 papa grande o camote 2 tazas de lechuga para ensalada	1 mango mediano 1 plátano 1 manzana mediana 2 ciruelas	1 taza de leche, leche de soya, leche de arroz 1 taza de yogurt 1/3 taza de queso desmenuzado 1 1/2 onzas de queso seco	1/4 taza de frijoles 1 onza de carne, pescado, o pollo cocinado 3–4 camarones 3 rebanadas delgadas de carnes frías 10–12 almendras o nueces
	1/2 taza equivale a:	1/2 taza equivale a:	1/2 taza equivale a:	
	1/2 taza de granos de maíz o 1/2 elote 1/2 taza de verduras (como zanahorias, apio, o brócoli) 1/2 taza de ejotes 1/2 taza de tomates 1/2 taza de jugo de tomate	1/2 de toronja 1 naranja pequeña 1/2 taza de jugo 100% de fruta 1 durazno 1/4 taza de pasitas 1/2 taza de de fresas, 1 kiwi 1/2 taza de de fruta enlatada	1/2 flan o pudín hecho con leche 1/2 taza de yogurt congelado	
Encuentra un equilibrio entre la alimentación y la actividad física <ul style="list-style-type: none"> Mantente físicamente activo por lo menos durante 60 minutos la mayoría de los días de la semana. 		Conoce los límites de las grasas, los azúcares y la sal (sodio). <ul style="list-style-type: none"> Escoge la mayor parte de fuentes de grasa de pescado, nueces, y aceites de vegetal. Limita las grasas sólidas como mantequilla, margarina, manteca, y comidas preparadas con estos. Lee las etiquetas de los alimentos—Datos de Nutrición, para limitar la grasa saturada, y sodio Escoge alimentos y bebidas bajos en azúcar. Los azúcares adicionales en los alimentos contribuyen calorías, con muy poco o nada de nutrientes. 		

*Basado en la recomendación sobre el consumo de calcio para los adolescentes de acuerdo con la Academia Nacional de las Ciencias.

MyPyramid

For Kids

Eat Right. Exercise. Have Fun.

MyPyramid.gov

Grains

Make half your grains whole

Start smart with breakfast. Look for whole-grain cereals.

Just because bread is brown doesn't mean it's whole-grain. Search the ingredients list to make sure the first word is "whole" (like "whole wheat").

Vegetables

Vary your veggies

Color your plate with all kinds of great-tasting veggies.

What's green and orange and tastes good? Veggies! Go dark green with broccoli and spinach, or try orange ones like carrots and sweet potatoes.

Fruits

Focus on fruits

Fruits are nature's treats – sweet and delicious.

Go easy on juice and make sure it's 100%.

Milk

Get your calcium-rich foods

Move to the milk group to get your calcium. Calcium builds strong bones.

Look at the carton or container to make sure your milk, yogurt, or cheese is lowfat or fat-free.

Meat & Beans

Go lean with protein

Eat lean or lowfat meat, chicken, turkey, and fish. Ask for it baked, broiled, or grilled – not fried.

It's nutty, but true. Nuts, seeds, peas, and beans are all great sources of protein, too.

For an 1,800-calorie diet, you need the amounts below from each food group. To find the amounts that are right for you, go to MyPyramid.gov.

Eat 6 oz. every day;
at least half should be whole

Eat 2 1/2 cups every day

Eat 1 1/2 cups every day

Get 3 cups every day;
for kids ages 2 to 8, it's 2 cups

Eat 5 oz. every day

Oils

Oils are not a food group, but you need some for good health. Get your oils from fish, nuts, and liquid oils such as corn oil, soybean oil, and canola oil.

Find your balance between food and fun

- Move more. Aim for at least 60 minutes everyday, or most days.
- Walk, dance, bike, rollerblade – it all counts. How great is that!

Fats and sugars — know your limits

- Get your fat facts and sugar smarts from the Nutrition Facts label.
- Limit solid fats as well as foods that contain them.
- Choose food and beverages low in added sugars and other caloric sweeteners.

MyPyramid Worksheet

Check how you did today and set a goal to aim for tomorrow

Write in Your Choices for Today	Food Group	Tip	Goal Based on a 2000 calorie pattern.	List each food choice in its food group*	Estimate Your Total
<div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div>	GRAINS	Make at least half your grains whole grains	6 ounce equivalents (1 ounce equivalent is about 1 slice bread, 1 cup dry cereal, or ½ cup cooked rice, pasta, or cereal)	<div></div> <div></div> <div></div>	<div></div> ounce equivalents
<div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div>	VEGETABLES	Try to have vegetables from several subgroups each day	2 ½ cups Subgroups: Dark Green, Orange, Starchy, Dry Beans and Peas, Other Veggies	<div></div> <div></div> <div></div>	<div></div> cups
<div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div>	FRUITS	Make most choices fruit, not juice	2 cups	<div></div> <div></div> <div></div>	<div></div> cups
<div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div>	MILK	Choose fat-free or low fat most often	3 cups (1 ½ ounces cheese = 1 cup milk)	<div></div> <div></div> <div></div>	<div></div> cups
<div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div>	MEAT & BEANS	Choose lean meat and poultry. Vary your choices—more fish, beans, peas, nuts, and seeds	5 ½ ounce equivalents (1 ounce equivalent is 1 ounce meat, poultry, or fish, 1 egg, 1 T. peanut butter, ½ ounce nuts, or ¼ cup dry beans)	<div></div> <div></div> <div></div>	<div></div> ounce equivalents
<div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div>	PHYSICAL ACTIVITY	Build more physical activity into your daily routine at home and work.	At least 30 minutes of moderate to vigorous activity a day, 10 minutes or more at a time.	<div></div> <div></div> <div></div>	<div></div> minutes

*Some foods don't fit into any group. These "extras" may be mainly fat or sugar—limit your intake of these.

How did you do today? ☐ Great ☐ So-So ☐ Not so Great

My food goal for tomorrow is: _____

My activity goal for tomorrow is: _____

CHICKEN SALAD SANDWICH

Ingredients:

• 2 cups chicken, diced	• 2 tsp strained lemon juice, freshly squeezed
• 1 rib celery, diced	• 2 Tbsp of Dijon mustard
• 1 scallion, trimmed and thinly sliced	• Pepper to taste
• 1 1/2 tsp fresh dill, finely chopped	• Tomato, sliced
• 2 Tbsp parsley, finely chopped	• Fresh spinach, washed
• 1/4 cup of mayonnaise	• Fruit and cottage cheese

Directions:

- 1) In a large mixing bowl, toss together the chicken, celery, scallions and herbs. Set aside.
- 2) In a small mixing bowl, whisk together the mayonnaise, lemon juice, mustard, and pepper. Add to large mixing bowl.
- 3) Add the chicken and mix gently until combined. Scoop half a cup of chicken salad on bread.
- 4) Add sliced tomato and fresh spinach.
- 5) Serve with fresh fruit and cottage cheese. **Build your PYRAMID everyday for a healthier YOU! Enjoy!**

**Serve on a bed of lettuce or in half an avocado. For a healthier snack, use low-fat mayonnaise.*

CAL POLY
Building Better Bodies

Do moderate intensity activity for 30 minutes most days, or preferably every day.

Pink Chefs

Lesson 5: Get the Facts!

Age of learners: 12-14

Time allotted: 2 hours

General Goal(s):

- This lesson teaches students how to read a Nutrition Facts Label, how to understand and use the Nutrition Facts Label, and how to make comparisons between two similar food products.

Specific Objectives:

- The students will describe how to use the Nutrition Facts Label more effectively and easily through step-by-step interactive instruction.
- The students will identify how to compare food products by working through a Nutrition Facts Panel Worksheet.
- The students will underline how to make quick, informed food choices through building label-reading skills.
- The students will apply the new skills of sauté and mince through culinary practice.

Required Materials:

Instructor needs:	Students need: groups of 3	Volunteers need:
First aid kit	Apron, hair net (1 per student)	Prepare the black beans. Drain the black beans and place in a pot. Add vegetable stock until covered. Boil uncovered on high until the liquid has almost evaporated. Mash beans.
Camera	Cutting board (1 per group)	1 Large pot with lid
Classroom rules	No skid shelf liner (1 per group)	Pot holders
Projector	Knife (1 per group)	1 Spatula, 1 potato masher
Laptop computer	Towel (1 per group)	*Have the volunteers set up a separate work station for ingredients, the instructor and each group. Place a cutting board with a non-slip liner underneath. Place a recipe and rotate the clean up responsibility at each station. Also, have the volunteers place the student's materials needed for the lesson at each station. This exercise will be repeated for the entire program.
Recipe (1 per group)	Colander (1 per group)	
Clean Up Responsibilities (1 per group)	Large bowl (1 per group)	
Classroom snack (seasonal fruit or vegetable) & drink	Spoon (1 per student)	
Nutrition Facts Label handout (1 per student)	Sauté pan (1 per group)	
Nutrition Facts Panel worksheet (1 per student)	Spatula (1 per group)	
Extra Tupperware	Plastic spoons for tasting	

Teacher Preparation:

- Read "How to Understand and Use the Nutrition Facts Label."
- Read about the nutritional qualities of the snack.
- Bring in two similar foods for comparison (ex. Kashi Go Lean! cereal and Captain Crunch cereal). Make a photocopy of the Nutrition Facts Labels to hand out in class.
- Read about the nutritional benefits of garlic, avocado, jalapeño, shallot, etc.

10 min. Anticipatory Set:

"The Food Label and You: Check it Out" video (~ 8 min)¹

This video discusses the different categories on a food label and what they mean. It goes over how to choose healthier food items in the grocery store by looking at the food label.

Pink Chefs

5 min.	Step-By-Step Procedures: 1) SNACK: pass out the snack and comment on the nutritional qualities of the snack. a) Briefly discuss the chicken salad sandwich. Did their families enjoy it?
15 min.	2) Pass out the Nutrition Facts Label handout. ² 3) Go over each of the highlighted areas using the US FDA “How to Understand and Use the Nutrition Facts Label” as a guide: ³ a) Serving Size b) Calories c) The Nutrients: How much? d) Understanding the footnote at the bottom of the Nutrition Facts Label e) % Daily Value f) Nutrients without %DV: Trans Fats, Proteins, and Sugars
10 min.	4) Pass out the Nutrition Facts Panel worksheet and the photocopy of the Nutrition Facts Labels for the two similar food items (Kashi Go Lean! & Captain Crunch) ⁴ a) Ask the class which one they would choose and why? Does one look better than the other? What is appealing about the brand you chose? Have a brief discussion. b) ACTIVITY: Go through the Nutrition Facts Panel worksheet using the two different food labels for comparison. Fill out the worksheet with the students. c) After completion of the worksheet, discuss which food is a better choice and why?
10 min.	5) Kitchen demonstration: a) Cutting an avocado, nutritional benefits (mono- and polyunsaturated fats, etc.) b) MINCE garlic. Talk about its nutritional benefits (lowers cholesterol, etc.) i) MINCE: to cut or chop into very small pieces c) Finely dice a jalapeño. REMEMBER TO TELL THE STUDENTS NOT TO TOUCH THEIR FACE AFTER HANDLING THE JALAPEÑO!!! d) Finely dice a shallot. e) Dice a tomato: ask a student to model how to dice a tomato. Use a serrated knife. f) Sauté ground turkey: using ground turkey is lower in fat than ground beef. i) sauté: cooked or browned in a pan containing a small quantity of fat or oil ii) Demonstrate this technique with a student from each group. iii) If there are vegetarians in the class, use tofu instead of meat.
50 min.	6) Split the students into groups. Start cooking.
20 min.	7) Divide the leftovers. Clean up!

Plan for Independent Practice:

Sauté; mince; making informed, educated food choices by reading Nutrition Facts Labels.

Closure:

- What did you learn?

Chef Challenge:

- Next time you go to the grocery store with your parents, compare food products by reading the Nutrition Facts Labels and make a food choice best suited for your family.

Did you follow the session plan with discussion points? YES / NO

Did you make any alterations to the session plan? YES / NO

If yes, what were these?

Were there any problems with the session?

Pink Chefs

Do you have any further comments about the session?

Write down the names of the students who practiced the sauté skill.

¹United States Food and Drug Administration/Center for Food Safety and Applied Nutrition. (1996). The Food Label and You: Check it Out. Accessed: April 25, 2008. <http://www.cfsan.fda.gov/~comm/vltlabel.html>

²United States Department of Health and Human Services/United States Department of Agriculture. (2006). Eating healthier and feeling better using the Nutrition Facts Label. Accessed: September 21, 2008. <http://www.cfsan.fda.gov/~acrobat/nutfacts.pdf>

³United States Food and Drug Administration/Center for Food Safety and Applied Nutrition. (2004). How to understand and use the Nutrition Facts Label. Accessed: September 12, 2008. <http://www.cfsan.fda.gov/~dms/foodlab.html>

⁴Mississippi State University Extension Services. Nutrition Facts Panel Worksheet. Accessed: September 21, 2008. <http://msucares.com/pubs/misc/m1414.pdf>

CAL POLY

Building Better Bodies

June 2000; Updated July 2003 and November 2004

How to Understand and Use the Nutrition Facts Label

[PDF format](#) | [Food Label video](#)

- [The Nutrition Facts Panel - An Overview](#)
- [The Serving Size](#)
- [Calories \(and Calories from Fat\)](#)
- [The Nutrients: How Much?](#)
- [Understanding the Footnote](#)
- [How the Daily Values \(DV\) Relate to the %DVs](#)
- [The Percent Daily Value \(%DV\)](#)
- [Quick Guide to %DV](#)
- [Nutrients With a %DV but No Weight Listed - Spotlight on Calcium](#)
- [Nutrients Without a %DV: *Trans* Fats, Protein, and Sugars](#)

People look at food labels for different reasons. But whatever the reason, many consumers would like to know how to use this information more effectively and easily. The following label-building skills are intended to make it easier for you to use nutrition labels to make quick, informed food choices that contribute to a healthy diet.

The Nutrition Facts Label - An Overview:

The information in the main or top section (see #1-4 and #6 on the sample nutrition label below), can vary with each food product; it contains product-specific information (serving size, calories, and nutrient information). The bottom part (see #5 on the sample label below) contains a footnote with Daily Values (DVs) for 2,000 and 2,500 calorie diets. This footnote provides recommended dietary information for important nutrients, including fats, sodium and fiber. The footnote is found only on larger packages and does not change from product to product.

In the following Nutrition Facts label we have colored certain sections to help you focus on those areas that will be explained in detail. You will not see these colors on the food labels on products you purchase.

Sample label for
Macaroni & Cheese

① **Start Here** →

② **Check Calories**

③ **Limit these Nutrients**

④ **Get Enough of these Nutrients**

⑤ **Footnote**

Nutrition Facts	
Serving Size 1 cup (228g) Servings Per Container 2	
Amount Per Serving	
Calories 250	Calories from Fat 110
	% Daily Value*
Total Fat 12g	18%
Saturated Fat 3g	15%
Trans Fat 3g	
Cholesterol 30mg	10%
Sodium 470mg	20%
Total Carbohydrate 31g	10%
Dietary Fiber 0g	0%
Sugars 5g	
Protein 5g	
Vitamin A	4%
Vitamin C	2%
Calcium	20%
Iron	4%
<small>* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.</small>	
	Calories: 2,000 2,500
Total Fat	Less than 65g 80g
Sat Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g

⑥ **Quick Guide to % DV**

• 5% or less is Low

• 20% or more is High

① The Serving Size

Serving Size 1 cup (228g)
Servings Per Container 2

(#1 on sample label):

The first place to start when you look at the Nutrition Facts label is the serving size and the number of servings in the package. Serving sizes are standardized to make it easier to compare similar foods; they are provided in familiar units, such as cups or pieces, followed by the metric amount, e.g., the number of grams.

The size of the serving on the food package influences the number of calories and all the nutrient amounts listed on the top part of the label. **Pay attention to the serving size, especially how many servings there are in the food package. Then ask yourself, "How many servings am I consuming"?** (e.g., 1/2 serving, 1 serving, or more) In the sample label, one serving of macaroni and cheese equals one cup. If you ate the whole package, you would eat **two** cups. That doubles the calories and other nutrient numbers, including the %Daily Values as shown in the sample label.

Example				
	Single Serving	%DV	Double Serving	%DV
Serving Size	1 cup (228g)		2 cups (456g)	
Calories	250		500	
Calories from Fat	110		220	
Total Fat	12g	18%	24g	36%
Trans Fat	1.5g		3g	
Saturated Fat	3g	15%	6g	30%
Cholesterol	30mg	10%	60mg	20%
Sodium	470mg	20%	940mg	40%
Total Carbohydrate	31g	10%	62g	20%
Dietary Fiber	0g	0%	0g	0%
Sugars	5g		10g	
Protein	5g		10g	
Vitamin A		4%		8%
Vitamin C		2%		4%
Calcium		20%		40%
Iron		4%		8%

2 Calories (and Calories from Fat)

Calories provide a measure of how much energy you get from a serving of this food. Many Americans consume more calories than they need without meeting recommended intakes for a number of nutrients. The calorie section of the label can help you manage your weight (i.e., gain, lose, or maintain.) **Remember: the number of servings you consume determines the number of calories you actually eat (your portion amount).**

Amount Per Serving	
Calories 250	Calories from Fat 110

(#2 on sample label):

In the example, there are 250 calories in one serving of this macaroni and cheese. How many calories from fat are there in ONE serving? Answer: 110 calories, which means almost half the calories in a single serving come from fat. What if you ate the whole package content? Then, you would consume two servings, or 500 calories, and 220 would come from fat.

The **General Guide to Calories** provides a general reference for calories when you look at a Nutrition Facts label. This guide is based on a 2,000 calorie diet.

Eating too many calories per day is linked to overweight and obesity.

General Guide to Calories

- 40 Calories is low
- 100 Calories is moderate
- 400 Calories or more is high

3 4 The Nutrients: How Much?

(#3 and 4 on sample label):

Look at the top of the nutrient section in the sample label. It shows you some key nutrients that impact on your health and separates them into two main groups:

Limit These Nutrients

Total Fat 12g	18%
Saturated Fat 3g	15%
Trans Fat 3g	
Cholesterol 30mg	10%
Sodium 470mg	20%

(#3 on sample label):

The nutrients listed first are the ones Americans generally eat in adequate amounts, or even too much. They are identified in yellow as **Limit these Nutrients**. Eating too much fat, saturated fat, *trans* fat, cholesterol, or sodium may increase your risk of certain chronic diseases, like heart disease, some cancers, or high blood pressure.

Important: Health experts recommend that you keep your intake of saturated fat, *trans* fat and cholesterol as low as possible as part of a nutritionally balanced diet.

Get Enough of These

Dietary Fiber 0g	0%
Vitamin A	4%
Vitamin C	2%
Calcium	20%
Iron	4%

(#4 on sample label):

Most Americans don't get enough dietary fiber, vitamin A, vitamin C, calcium, and iron in their diets. They are identified in blue as **Get Enough of these Nutrients**. Eating enough of these nutrients can improve your health and help reduce the risk of some diseases and conditions. For example, getting enough calcium may reduce the risk of osteoporosis, a condition that results in brittle bones as one ages (see [calcium section below](#)). Eating a diet high in dietary fiber promotes

healthy bowel function. Additionally, a diet rich in fruits, vegetables, and grain products that contain dietary fiber, particularly soluble fiber, and low in saturated fat and cholesterol may reduce the risk of heart disease.

Remember: You can use the Nutrition Facts label not only to help *limit* those nutrients you want to cut back on but also to *increase* those nutrients you need to consume in greater amounts.

5 Understanding the Footnote on the Bottom of the Nutrition Facts Label

*** Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.**

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

(#5 on sample label)

Note the * used after the heading "%Daily Value" on the Nutrition Facts label. It refers to the Footnote in the lower part of the nutrition label, which tells you "**%DVs are based on a 2,000 calorie diet**". This statement must be on all food labels. But the remaining information in the full footnote may not be on the package if the size of the label is too small. When the full footnote does appear, it will always be the same. It doesn't change from product to product, because it shows recommended dietary advice for all Americans--it is not about a specific food

product.

Look at the amounts circled in red in the footnote--these are the Daily Values (DV) for each nutrient listed and are based on public health experts' advice. DVs are recommended levels of intakes. DVs in the footnote are based on a 2,000 or 2,500 calorie diet. Note how the DVs for some nutrients change, while others (for cholesterol and sodium) remain the same for both calorie amounts.

How the Daily Values Relate to the %DVs

Look at the example below for another way to see how the Daily Values (DVs) relate to the %DVs and dietary guidance. For each nutrient listed there is a DV, a %DV, and dietary advice or a goal. If you follow this dietary advice, you will stay within public health experts' recommended upper or lower limits for the nutrients listed, based on a 2,000 calorie daily diet.

Examples of DVs versus %DVs Based on a 2,000 Calorie Diet			
Nutrient	DV	%DV	Goal
Total Fat	65g	= 100%DV	Less than
Sat Fat	20g	= 100%DV	Less than
Cholesterol	300mg	= 100%DV	Less than
Sodium	2400mg	= 100%DV	Less than
Total Carbohydrate	300g	= 100%DV	At least
Dietary Fiber	25g	= 100%DV	At least

Upper Limit - Eat "Less than"...

The nutrients that have "upper daily limits" are listed first on the footnote of larger labels and on the example above. Upper limits means it is recommended that you stay below - eat "less than" - the Daily Value nutrient amounts listed per day. For example, the DV for Saturated fat (in the yellow section) is 20g. This amount is 100% DV for this nutrient. What is the goal or dietary advice? To eat "less than" 20 g or 100%DV for the day.

Lower Limit - Eat "At least"...

Now look at the section in blue where dietary fiber is listed. The DV for dietary fiber is 25g, which is 100% DV. This means it is recommended that you eat "at least" this amount of dietary fiber per day.

The DV for Total Carbohydrate (section in white) is 300g or 100%DV. This amount is recommended for a balanced daily diet that is based on 2,000 calories, but can vary, depending on your daily intake of fat and protein.

Now let's look at the %DVs.

6 The Percent Daily Value (%DV):

The % Daily Values (%DVs) are based on the Daily Value recommendations for key nutrients but only for a 2,000 calorie daily diet--not 2,500 calories. You, like most people, may not know how many calories you consume in a day. But you can still use the %DV as a frame of reference whether or not you consume more or less than 2,000 calories.

The %DV helps you determine if a serving of food is high or low in a nutrient. Note: a few nutrients, like *trans* fat, do not have a %DV--they will be discussed later.

Do you need to know how to calculate percentages to use the %DV? No, the label (the %DV) does the math for you. It helps you interpret the numbers (grams and milligrams) by putting them all on the same scale for the day (0-100%DV). The %DV column doesn't add up vertically to 100%. Instead each nutrient is based on 100% of the daily requirements for that nutrient (for a 2,000 calorie diet). This way you can tell high from low and know which nutrients contribute a lot, or a little, to your **daily** recommended allowance (upper or lower).

% Daily Value*	
18%	
15%	
10%	
20%	
10%	
0%	
4%	
2%	
20%	
4%	

Quick Guide to %DV:

	% Daily Value*
Total Fat 12g	18%
Saturated Fat 3g	15%
Trans Fat 3g	
Cholesterol 30mg	10%
Sodium 470mg	20%
Total Carbohydrate 31g	10%
Dietary Fiber 0g	0%
Sugars 5g	
Protein 5g	
Vitamin A	4%
Vitamin C	2%
Calcium	20%
Iron	4%

5%DV or less is low and 20%DV or more is high

(#6 on sample label):

This guide tells you that **5%DV or less is low** for all nutrients, those you want to limit (e.g., fat, saturated fat, cholesterol, and sodium), or for those that you want to consume in greater amounts (fiber, calcium, etc). As the **Quick Guide** shows, **20%DV or more is high** for all nutrients.

Example: Look at the amount of Total Fat in one serving listed on the sample nutrition label. Is 18%DV contributing a lot or a little to your fat limit of 100% DV? Check the **Quick Guide to %DV**. 18%DV, which is below 20%DV, is not yet high, but what if you ate the whole package (two servings)? You would double that amount, eating 36% of your daily allowance for Total Fat. Coming from just one food, that amount leaves you with 64% of your fat allowance (100%-36%=64%) for *all* of the other foods you eat that day, snacks and drinks included.

Using the %DV for:

Comparisons: The %DV also makes it easy for you to make comparisons. You can compare one product or brand to a similar product. Just make sure the serving sizes are similar, especially the weight (e.g. gram, milligram, ounces) of each product. It's easy to see which foods are higher or lower in nutrients because the serving sizes are generally consistent for similar types of foods, (see the [comparison example](#) at the end) except in a few cases like cereals.

Nutrient Content Claims: Use the %DV to help you quickly distinguish one claim from another, such as "reduced fat" vs. "light" or "nonfat." Just compare the %DVs for Total Fat in each food product to see which one is higher or lower in that nutrient--**there is no need to memorize definitions**. This works when comparing all nutrient content claims, e.g., less, light, low, free, more, high, etc.

Dietary Trade-Offs: You can **use the %DV to help you make dietary trade-offs** with other foods throughout the day. You don't have to give up a favorite food to eat a healthy diet. When a food you like is high in fat, balance it with foods that are low in fat at other times of the day. Also, pay attention to how much you eat so that the **total** amount of fat for the day stays below 100%DV.

Nutrients With a %DV but No Weight Listed - Spotlight on Calcium:

Calcium: Look at the %DV for calcium on food packages so you know how much one serving contributes to the *total amount you need* per day. Remember, a food with 20%DV or more contributes a lot of calcium to your daily total, while one with 5% DV or less contributes a little.

Experts advise adult consumers to consume adequate amounts of calcium, that is, 1,000mg or 100%DV in a daily 2,000 calorie diet. This advice is often given in milligrams (mg), but the Nutrition Facts label **only** lists a % DV for calcium.

For certain populations, they advise that adolescents, especially girls, consume 1,300mg (130%DV) and post-menopausal women consume 1,200mg (120%DV) of calcium daily. The DV for calcium on food labels is 1,000mg.

Don't be fooled -- always check the label for calcium because you can't make assumptions about the amount of calcium in specific food categories. Example: the amount of calcium in milk, whether skim or whole, is generally the same per serving, whereas the amount of calcium in the same size yogurt container (8oz) can vary from 20-45 %DV.

Nutrition Facts	
Serving Size 1 cup (236ml)	
Servings Per Container 1	
Amount Per Serving	
Calories 80	Calories from Fat 0
% Daily Value*	
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol Less than 5mg	0%
Sodium 120mg	5%
Total Carbohydrate 11g	4%
Dietary Fiber 0g	0%
Sugars 11g	
Protein 9g	17%
Vitamin A 10%	Vitamin C 4%
Calcium 30%	Iron 0% • Vitamin D 25%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

Equivalencies

30% DV = 300mg calcium = one cup of milk
 100% DV = 1,000mg calcium
 130% DV = 1,300mg calcium

Nutrients Without a %DV: *Trans* Fats, Protein, and Sugars:

Note that *Trans* fat, Sugars and, Protein do not list a %DV on the Nutrition Facts label.

Trans Fat: Experts could not provide a reference value for *trans* fat nor any other information that FDA believes is sufficient to establish a Daily Value or %DV. Scientific reports link *trans* fat (and saturated fat) with raising blood LDL ("bad") cholesterol levels, both of which increase your risk of coronary heart disease, a leading cause of death in the US.

Important: Health experts recommend that you keep your intake of saturated fat, *trans* fat and cholesterol as low as possible as part of a nutritionally balanced diet.

Protein: A %DV is required to be listed if a claim is made for protein, such as "high in protein". Otherwise, unless the food is meant for use by infants and children under 4 years old, none is needed.

Current scientific evidence indicates that protein intake is not a public health concern for adults and children over 4 years of age.

Sugars: No daily reference value has been established for sugars because no recommendations have been made for the total amount to eat in a day. Keep in mind, the sugars listed on the Nutrition Facts label include naturally occurring sugars (like those in fruit and milk) as well as those added to a food or drink. Check the ingredient list for specifics on added sugars.

Take a look at the Nutrition Facts label for the two yogurt examples. The plain yogurt on the left has 10g of sugars, while the fruit yogurt on the right has 44g of sugars in one serving.

Now look below at the ingredient lists for the two yogurts. Ingredients are listed in descending order of weight (from most to least). Note that no added sugars or sweeteners are in the list of ingredients for the plain yogurt, yet 10g of sugars were listed on the Nutrition Facts label. This is because there are no added sugars in plain yogurt, only naturally occurring sugars (lactose in the milk).

Plain Yogurt - contains no added sugars

INGREDIENTS: CULTURED PASTEURIZED GRADE A NONFAT MILK, WHEY PROTEIN CONCENTRATE, PECTIN, CARRAGEENAN.

Fruit Yogurt - contains added sugars

INGREDIENTS: CULTURED GRADE A REDUCED FAT MILK, APPLES, HIGH FRUCTOSE CORN SYRUP, CINNAMON, NUTMEG, NATURAL FLAVORS, AND PECTIN. CONTAINS ACTIVE YOGURT AND L. ACIDOPHILUS CULTURES.

If you are concerned about your intake of sugars, make sure that added sugars are not listed as one of the first few ingredients. Other names for added sugars include: corn syrup, high-fructose corn syrup, fruit juice concentrate, maltose, dextrose, sucrose, honey, and maple syrup.

To limit nutrients that have no %DV, like *trans* fat and sugars, compare the labels of similar products and choose the food with the lowest amount.

Plain Yogurt	
Nutrition Facts	
Serving Size 1 container (226g)	
Amount Per Serving	
Calories 110	Calories from Fat 0
% Daily Value*	
Total Fat 0g	0 %
Saturated Fat 0g	0 %
Trans Fat 0g	
Cholesterol Less than 5mg	1 %
Sodium 160mg	7 %
Total Carbohydrate 15g	5 %
Dietary Fiber 0g	0 %
Sugars 10g	
Protein 13g	
Vitamin A 0 %	Vitamin C 4 %
Calcium 45 %	Iron 0 %
*Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.	

Fruit Yogurt	
Nutrition Facts	
Serving Size 1 container (227g)	
Amount Per Serving	
Calories 240	Calories from Fat 25
% Daily Value*	
Total Fat 3g	4 %
Saturated Fat 1.5g	9 %
Trans Fat 0g	
Cholesterol 15mg	5 %
Sodium 140mg	6 %
Total Carbohydrate 46g	15 %
Dietary Fiber Less than 1g	3 %
Sugars 44g	
Protein 9g	
Vitamin A 2 %	Vitamin C 4 %
Calcium 35 %	Iron 0 %
*Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.	

Comparison Example

Below are two kinds of milk- one is "Reduced Fat," the other is "Nonfat" milk. Each serving size is one cup. Which has more calories and more saturated fat? Which one has more calcium?

REDUCED FAT MILK 2% Milkfat

Nutrition Facts		
Serving Size 1 cup (236ml)		
Servings Per Container 1		
Amount Per Serving		
Calories	120	Calories from Fat 45
% Daily Value*		
Total Fat	5g	8%
Saturated Fat	3g	15%
Trans Fat	0g	
Cholesterol	20mg	7%
Sodium	120mg	5%
Total Carbohydrate	11g	4%
Dietary Fiber	0g	0%
Sugars	11g	
Protein	9g	17%
Vitamin A 10% • Vitamin C 4%		
Calcium 30% • Iron 0% • Vitamin D 25%		
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:		

NONFAT MILK

Nutrition Facts		
Serving Size 1 cup (236ml)		
Servings Per Container 1		
Amount Per Serving		
Calories	80	Calories from Fat 0
% Daily Value*		
Total Fat	0g	0%
Saturated Fat	0g	0%
Trans Fat	0g	
Cholesterol	Less than 5mg	0%
Sodium	120mg	5%
Total Carbohydrate	11g	4%
Dietary Fiber	0g	0%
Sugars	11g	
Protein	9g	17%
Vitamin A 10% • Vitamin C 4%		
Calcium 30% • Iron 0% • Vitamin D 25%		
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:		

Answer: As you can see, they both have the same amount of calcium, but the nonfat milk has no saturated fat and has 40 calories less per serving than the reduced fat milk.

This document was issued in June 2000 and updated July 2003 and November 2004.

For more recent information on Food Labeling

See <http://www.cfsan.fda.gov/label.html>

Eating healthier and
feeling better using the

Nutrition Facts Label

U.S. Department of Health and Human Services
U.S. Department of Agriculture
www.healthierus.gov/dietaryguidelines

THE RIGHT TOOL TO BALANCE YOUR DIET

You probably already use the Nutrition Facts label in some way—maybe to check calories, fat or sodium content. But, the more familiar you are with the information, the more you'll want to use it daily to ensure you're eating a healthy, balanced diet.

Use the label when you shop, as you plan your meals, and as you cook each day. The label makes it easy to determine the amounts of nutrients you're getting and to compare one product to another.

Strive for a diet that emphasizes fruits, vegetables, whole grains, and fat-free or low-fat milk and milk products. Include lean meats, poultry, fish, beans, and nuts. Choose foods that are low in saturated fats, *trans* fats, cholesterol, salt, and added sugar.

Regular physical activity is important for your overall health and fitness. It also helps you control body weight by balancing the calories you take in from food with the calories you expend each day. For more information, visit www.healthierus.gov/dietaryguidelines.

USE THE NUTRITION FACTS LABEL TO EAT HEALTHIER

Check the serving size and number of servings.

- The Nutrition Facts Label information is based on ONE serving, but many packages contain more. Look at the serving size and how many servings you are actually consuming. If you double the servings you eat, you double the calories and nutrients, including the % DVs.
- When you compare calories and nutrients between brands, check to see if the serving size is the same.

Calories count, so pay attention to the amount.

- This is where you'll find the number of calories per serving and the calories from fat in each serving.
- Fat-free doesn't mean calorie-free. Lower fat items may have as many calories as full-fat versions.
- If the label lists that 1 serving equals 3 cookies and 100 calories, and you eat 6 cookies, you've eaten 2 servings, or twice the number of calories and fat.

Look for foods that are rich in these nutrients.

- Use the label not only to limit fat and sodium, but also to increase nutrients that promote good health and may protect you from disease.
- Some Americans don't get enough vitamins A and C, potassium, calcium, and iron, so choose the brand with the higher % DV for these nutrients.
- Get the most nutrition for your calories—compare the calories to the nutrients you would be getting to make a healthier food choice.

Nutrition Facts

Serving Size 1 cup (228g)
Servings Per Container 2

Amount Per Serving

Calories 250 **Calories from Fat** 110

% Daily Value*

Total Fat 12g 18%
Saturated Fat 3g 15%
Trans Fat 3g

Cholesterol 30mg 10%
Sodium 470mg 20%

Potassium 700mg 20%

Total Carbohydrate 31g 10%
Dietary Fiber 0g 0%

Sugars 5g
Protein 5g

Vitamin A 4%
Vitamin C 2%
Calcium 20%
Iron 4%

* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.

		Calories:	2,000	2,500
Total fat	Less than		65g	80g
Sat fat	Less than		20g	25g
Cholesterol	Less than		300mg	300mg
Sodium	Less than		2,400mg	2,400mg
Total Carbohydrate			300g	375g
Dietary Fiber			25g	30g

The % Daily Value is a key to a balanced diet.

The % DV is a general guide to help you link nutrients in a serving of food to their contribution to your total daily diet. It can help you determine if a food is high or low in a nutrient—5% or less is low, 20% or more is high. You can use the % DV to make dietary trade-offs with other foods throughout the day. The * is a reminder that the % DV is based on a 2,000-calorie diet. You may need more or less, but the % DV is still a helpful gauge.

Know your fats and reduce sodium for your health.

- To help reduce your risk of heart disease, use the label to select foods that are lowest in saturated fat, trans fat and cholesterol.
- Trans fat doesn't have a % DV, but consume as little as possible because it increases your risk of heart disease.
- The % DV for total fat includes all different kinds of fats.
- To help lower blood cholesterol, replace saturated and trans fats with monounsaturated and polyunsaturated fats found in fish, nuts, and liquid vegetable oils.
- Limit sodium to help reduce your risk of high blood pressure.

Reach for healthy, wholesome carbohydrates.

- Fiber and sugars are types of carbohydrates. Healthy sources, like fruits, vegetables, beans, and whole grains, can reduce the risk of heart disease and improve digestive functioning.
- Whole grain foods can't always be identified by color or name, such as multi-grain or wheat. Look for the "whole" grain listed first in the ingredient list, such as whole wheat, brown rice, or whole oats.
- There isn't a % DV for sugar, but you can compare the sugar content in grams among products.
- Limit foods with added sugars (sucrose, glucose, fructose, corn or maple syrup), which add calories but not other nutrients, such as vitamins and minerals. Make sure that added sugars are not one of the first few items in the ingredients list.

For protein, choose foods that are lower in fat.

- Most Americans get plenty of protein, but not always from the healthiest sources.
- When choosing a food for its protein content, such as meat, poultry, dry beans, milk and milk products, make choices that are lean, low-fat, or fat free.

HERE'S WHERE TO FIND MORE INFORMATION ON HEALTHY LIVING:

U.S. Department of Health and Human Services

Dietary Guidelines for Americans

www.healthierus.gov/dietaryguidelines

Dietary Approaches to Stop Hypertension (DASH)

www.nhlbi.nih.gov/health/public/heart/hbp/dash

U.S. Food and Drug Administration

Nutrition Facts Label

www.cfsan.fda.gov/~dms/foodlab.html

U.S. Centers for Disease Control and Prevention

Nutrition and Physical Activity

www.cdc.gov/nccdphp/dnpa

U.S. Department of Agriculture

Nutrition Information

www.nutrition.gov

Food Pyramid

www.mypyramid.gov

FDA is responsible for promoting and protecting the public's health by ensuring that the nation's food supply is safe, sanitary, wholesome, and honestly labeled.

Nutrition Facts Panel Worksheet

Reading the Nutrition Facts Panel Worksheet

Grocery stores are packed with thousands of items. A great place to start learning about the ingredients you are using is to read the Nutrition Facts Panel.

The worksheet below will help you see just how different foods can be. Use the chart below to compare two items. See if you can decide the best choice.

	Product A		Product B	
Describe each product.				
1. What is the serving size?				
2. How many servings are in the container?				
3. How many calories would a serving of this food provide?				
4. List the contents provided on the label for each of the following nutrients:	Weight	% Daily Value	Weight	% Daily Value
Total Fat				
Saturated Fat				
Trans Fat				
Cholesterol				
Sodium				
Protein				
Sugars				
Carbohydrates				
Dietary Fiber				
Vitamin A				
Vitamin C				
Other Vitamins & Minerals				

5. Which food is the better choice? Why?

By **Melissa Rhodus**, Area Extension Agent II, Pearl River County

Mississippi State University does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, group affiliation, age, disability, or veteran status.

M1414

Extension Service of Mississippi State University, cooperating with U.S. Department of Agriculture. Published in furtherance of Acts of Congress, May 8 and June 30, 1914. VANCE H. WATSON, Interim Director (POD 11-05)

SOFT TACOS WITH BLACK BEANS

Ingredients:

- 1 pound of ground turkey, sautéed
- 1 can black beans, drained
- 1/2 packet of taco seasoning
- 2 dashes of hot sauce
- 2 bell peppers, diced
- Vegetable stock
- 1 tablespoon olive oil
- Pinch of salt
- Pepper to taste

Directions:

- 1) Heat up skillet with olive oil. When hot, add ground turkey (wait for a slight smoke).
- 2) Add bell peppers and taco seasoning. Sauté. Add pepper to taste.
- 3) Cook for about 10 minutes. Remove from heat when done. Taste.
- 4) Place drained black beans in a pot with vegetable stock.
- 5) Add the hot sauce, salt and pepper to taste. Simmer until stock has reduced.
- 6) Mash the beans. Taste and ENJOY with corn tortillas and guacamole!

**Ground turkey is lower in fat than ground beef!*

CAL POLY
Building Better Bodies

1 ounce equivalent in the meat and beans group = 1/4 cup of cooked beans

HOLY GUACAMOLE

Ingredients:

• 3 avocados, chopped	• 2 cloves of garlic, minced
• 1 shallot, finely diced	• 1 jalapeño, finely diced
• 1 tomato, diced	• Pepper to taste
• Juice from 1/2 lime	• Pinch of salt

Directions:

- 1) In a large mixing bowl, add chopped avocado. Lightly mash to desired texture.
- 2) Add shallot and garlic. Add diced tomato.
- 3) Cut jalapeño in half, remove all the seeds and membrane, then chop jalapeño. Add to the mix.
- 4) Add lime juice, salt and pepper to taste. Mix. Taste. Enjoy!

****Do not touch your face
after handling the
JALAPEÑO!!!***

CAL POLY
Building Better Bodies

½ medium avocado = 1 fruit & 3 fat servings

Pink Chefs

Lesson 6: Carbohydrates and Protein

Age of learners: 12-14 years

Time allotted: 2 hours

General Goal(s):

- This lesson teaches students how the body gets energy from carbohydrates and proteins. It discusses the difference between simple and complex carbohydrates, refined and unrefined carbohydrates, and what makes a grain whole. Also, it discusses the difference between complete, incomplete, and complementary proteins and how the body needs protein for cell replacement.

Specific Objectives:

- The students will identify that carbohydrates and proteins are two of three energy sources for the body through a cooking practicum.
- The students will be able to describe how carbohydrates (simple and complex) are used for energy through cooperative learning and show and tell.
- The students will be able to distinguish the difference between refined and unrefined starchy carbohydrates through discussion of whole grains and refined grain products.
- The students will be able to distinguish the difference between the types of proteins: complete, incomplete, and complementary through a group activity.
- The students will identify the appropriate serving sizes of carbohydrate products and proteins through repetition.
- The students will use a standard taste test methodology to assess different soymilk products in terms of taste, texture, and descriptive words.
- The students will be able to name two food sources: one complex carbohydrate and one protein in the meal they prepare.

Required Materials:

Instructor needs:	Students need: groups of 3	Volunteers need:
First aid kit	Apron, hair net (1 per student)	Have the volunteers prepare the quinoa according to the package. Use vegetable stock.
Camera	Cutting board (1 per group)	1 Pot with lid
Classroom rules	No skid shelf liner (1 per group)	Pot holders
Classroom snack (seasonal fruit or vegetable) & drink	Knife (1 per group)	1 Spatula
Recipe (1 per group)	Towel (1 per group)	*Have the volunteers set up a separate work station for ingredients, the instructor and each group. Place a cutting board with a non-slip liner underneath. Place a recipe and rotate the clean up responsibility at each station. Also, have the volunteers place the student's materials needed for the lesson at each station. This exercise will be repeated for the entire program.
Clean Up Responsibilities (1 per group)	Colander (1 per group)	
Carbohydrate & Protein handout (1 per student)	Large bowl (1 per group)	
Soymilk Taste Test worksheet (1 per student)	Spoon (1 per student)	
Pre-measured serving sizes	Sauté pan (1 per group)	
Mini plastic cups	Spatula (1 per group)	
Extra Tupperware	Plastic spoons for tasting	

Teacher Preparation:

- Read about quinoa and soybeans and their nutritional benefits.
- Read about carbohydrates and proteins.
- Bring in 1 loaf of white bread and 1 loaf of whole wheat bread.
- Bring in a sample of white flour and whole wheat flour.

Pink Chefs

- Bring in a bag of edamame, dried soybeans, tofu, and soymilk. Read how soybeans are processed into tofu and soymilk.
- Bring in plain, vanilla, and chocolate soymilk for a taste test.
- Pre-measured serving sizes of carbohydrates (quinoa) and proteins (tofu).
- Bring in pre-measured examples of complementary proteins.

5 min.

Anticipatory Set:

Display 3 oranges and 1 can of soda. First, ask the class which would they choose, the orange or the soda and why. Ask the class if they feel full after drinking a can of soda. Ask the class if they feel satisfied or full after eating 1 orange. Then discuss how 3 oranges is the same amount of calories as one soda. Could you imagine eating 3 oranges? Discuss how their bodies react to the consumption of these drinks and processed sugar. **ALTERNATIVE ACTIVITY:** pass around tubes of sugar contained in food products (ex. soda, candy, etc.).

10 min.

Step-by-step Procedure:

- 1) **SNACK:** pass out and discuss the snack for the day.
- 2) Have a brief discussion regarding the soft tacos with black beans and guacamole.
- 3) Pass out the Carbohydrate and Protein handout.¹⁻²
- 4) What is a Carbohydrate?¹
 - a) Sugar used by the body for energy.
 - b) Foods that have Carbohydrates.
 - c) Types of Carbohydrates:
 - i) Complex
 - ii) Simple
 - iii) What is a whole grain?
 - iv) Pass around the loaves of bread. Discuss why the wheat bread is heavier than the white bread (it contains all the parts of the grain).
 - v) Pass around the flours. Have the students touch the flour and identify the difference in texture; therefore, there is a difference in weight.
 - vi) Pass around serving size examples of carbohydrates.
 - vii) **ALTERNATIVE ACTIVITY:** use plastic food samples.
 - viii) Use **QUINOA** for one of the examples. Discuss how it is going to be used in today's recipe and the grains nutritional value.

15 min.

- 5) What is protein?²
 - a) Part of every cell, tissue, and organ.
 - b) Foods that have proteins.
 - c) Types of proteins:
 - i) Complete
 - ii) Incomplete
 - iii) Complementary
 - (1) **ACTIVITY:** Split the students up into groups of 2-3. Onto a table, place the pre-measured examples of complementary proteins. Have the students pair the proteins to make a complete protein, 1 per group. Go around the classroom and allow the groups to discuss their complementary proteins.
 - iv) Pass around serving size examples of proteins.
 - (1) Introduce edamame. Pass around the soybean for the students to try. Demonstrate how the outer part of the seed can be removed. Once it is removed, the seed is no longer whole.
 - (2) Pass around the dried soybean.
 - (3) Discuss how soybeans are processed into tofu and soymilk.
 - (4) **TASTE TEST:** Pass out the Soymilk Taste Test worksheet. Have the students taste the plain, vanilla, and chocolate soymilks. Then, allow them to rate the soymilk on taste, texture, and list 2 words to describe the soymilk. Have a brief discussion. Has anyone had soymilk before? If not, what did they think?
 - (5) Collect the Soymilk Taste Test worksheet.
 - (6) Briefly discuss **Tofu's** nutritional value and how it will be used in the recipe.

Pink Chefs

10 min.	6) Kitchen demonstration:
a) Mince garlic: have a student model how to mince garlic.
b) Introduce gingerroot. Show the students how to peel the ginger, then use the fine grater or mince the ginger with a knife.
c) Discuss cornstarch and how it is used as a thickening agent.
d) Ask the students who have not sautéed to do that portion of the recipe.
60 min.	7) Make the recipe! ³
20 min.	8) Divide the leftovers. Clean up!

Plan for Independent Practice:

- Mince garlic and ginger, sauté tofu, use cornstarch as a thickening agent; make informed, educated choices regarding carbohydrate and protein products.

Closure:

- What did you learn?
- Ask the students to name the carbohydrate source and protein source prepared in the recipe.

Chef Challenge:

- Within the next week, replace rice with quinoa or replace a protein source with tofu in a family meal.

Did you follow the session plan with discussion points? YES / NO

Did you make any alterations to the session plan? YES / NO

If yes, what were these?

Were there any problems with the session?

Do you have any further comments about the session?

¹U.S. National Library of Medicine/National Institutes of Health. (2006). Medline Plus Medical Encyclopedia: Carbohydrates. Accessed: September 21, 2008.
<http://www.nlm.nih.gov/medlineplus/ency/article/002469.htm>

²Body for Life 2. (2003). Incomplete vs. Complete Proteins. Accessed: September 21, 2008.
<http://www.bodyforlife2.com/incompletprotein.htm>

³Janice Smiley, Oregon State University Extension Services. (2005). Healthy Recipes: Vegetable and Turkey Stir-Fry. Accessed: September 21, 2008.
<http://healthyrecipes.oregonstate.edu/sites/default/files/pdf/VegetablesandTurkeyStir-Fry.pdf>

Carbohydrates & Protein

Pink Chefs

Carbohydrate

What is a Carbohydrate? Carbohydrates are used by your body for energy and help keep the body going. Your body can use carbohydrates immediately as energy when you are playing sports, exercising, or learning in class.

Carbohydrates are found in the following foods:

- Breads, cereals, pasta, rice, and other grains!
- Vegetables
- Fruits
- Milk and milk products
- Foods containing added sugar (cakes, cookies)!

★ The healthiest carbohydrates have high fiber & low sugar!

TYPES OF CARBOHYDRATES:

1. **Complex Carbohydrate:** fiber and starch are the two types of complex carbohydrates. Quite a few foods contain starch and fiber such as: *breads, cereals, and vegetables.*
 - Starch is in certain vegetables (potatoes, beans, peas, and corn)
 - Starch is also found in breads, cereals, and grains.
 - Dietary fiber is in vegetables, fruits, and whole grain foods.
2. **Simple Carbohydrate:** include sugars found naturally in foods such as fruits, vegetables, and milk products. Simple carbohydrates also include *sugars added* during food processing and refining.!

★ In general, foods with added sugars have fewer nutrients than foods with naturally-occurring sugars.

What is a whole grain? Whole grains are a good source of fiber and nutrients. Whole grains refer to grains that have all of the parts of the grain seed, not refined or processed!

Protein

What is protein? Proteins are part of every cell, tissue, and organ in our bodies. These body proteins are constantly being broken down and replaced. The protein in the food replaces these proteins in our body.

Protein is found in the following foods:

- Meats, poultry, and fish !!!
- Legumes (dry beans, peas, soybeans)
- Tofu
- Eggs
- Nuts and Seeds
- Milk, milk products, and soy milk
- Whole grains, some vegetables and some fruit

Animal-based proteins, such as meat, poultry, fish, milk, eggs, and cheese are considered complete proteins.

TYPES OF PROTEIN:

1. **Complete Protein:** a source of protein that provides all nutrients we need. Also known as a high quality protein.
2. **Incomplete protein:** a source of protein that does not provide all nutrients that the body needs to replace the lost proteins.
3. **Complementary Protein:** when you take two or more incomplete protein sources and together provide all the nutrients.

Examples of complementary proteins:

- Peanut Butter Sandwich (on whole wheat bread)
- Rice and Beans
- Beans & Tortillas
- Macaroni and Cheese
- Tofu w/ Rice
- Hummus w/ Pita Bread!
- Chickpeas (garbanzo beans) & Rice

CAL POLY

Building Better Bodies

TASTE TEST

Rate the soy milk on a scale of 1-4

1 = not good, 2 = fair, 3 = good, 4 = very good

Also, list 2 words that describe the soy milk;
for example: creamy, sweet, smooth, chocolaty, grainy.

plain

Taste

Texture

List 2 words:

vanilla

Taste

Texture

List 2 words:

chocolate

Taste

Texture

List 2 words:

CAL POLY

Building Better Bodies

VEGETABLE TOFU STIR-FRY

Ingredients:

- 1 tablespoon vegetable oil
- 2 clove garlic, minced
- 1/2 tsp. salt
- 1 tsp. ginger root, minced
- 1 package of firm tofu, cut into 1/2 inch cubes
- 2 cups of frozen vegetables

- 1/2 tsp. sugar
- 3 cups cooked quinoa

SAUCE:

- 1 Tbsp. cornstarch
- 2 tsp. low-sodium soy sauce
- 1 cup vegetable stock

Nutrition Facts

Serving Size 1 cup (140g)
Servings Per Container 8

Amount Per Serving

Calories 150 **Calories from Fat** 30

% Daily Value*

Total Fat 3.5g **5%**

Saturated Fat 1g **5%**

Trans Fat 0g

Cholesterol 20mg **7%**

Sodium 180mg **8%**

Total Carbohydrate 20g **7%**

Dietary Fiber 2g **8%**

Sugars 1g

Protein 10g

Vitamin A 35% • Vitamin C 6%

Calcium 4% • Iron 6%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

		Calories	2,000	2,500
Total Fat	Less Than	65g	80g	
Saturated Fat	Less Than	20g	25g	
Cholesterol	Less Than	300mg	300 mg	
Sodium	Less Than	2,400mg	2,400mg	
Total Carbohydrate		300g	375g	
Dietary Fiber		25g	30g	

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

Directions:

- 1) Make quinoa according to the package with vegetable stock.
- 1) Heat oil in a large fry pan over medium heat. Add garlic and ginger root. Sauté for 30 seconds.
- 2) Add tofu. Sauté until golden brown. Add frozen vegetables and salt. Stir-fry for 1 minute.
- 3) Reduce heat to prevent scorching. Add sugar. When vegetables are tender, remove pan from heat.
- 4) If vegetables are firm, add 1-2 tablespoons of water, cover, and cook for 2 more minutes, or until tender.
- 5) Mix sauce ingredients in a mixing bowl. Pour over vegetables and tofu at the end of cooking time.
- 6) Cook until sauce thickens slightly.
- 7) Serve immediately over quinoa. Taste. **Enjoy!!**

**Tofu is rich in minerals and an excellent source of high-quality protein, polyunsaturated fats & B vitamins.*

CAL POLY
Building Better Bodies

1/4 cup of tofu = 1 ounce equivalent in the meat and beans group

Pink Chefs

Lesson 7: What are FATS?

Age of learners: 12-14

Time allotted: 2 hours

General Goal(s):

- This lesson teaches students that in baking, the fats and oils called for in a recipe can be substituted by using other, less caloric, more nutritious ingredients while still creating the expected 'standard' baked product.

Specific Objectives:

- The students will use a standard taste test methodology to assess reduced-fat baked products in terms of taste, texture and presentation.
- The students will demonstrate through creating reduced-fat muffins that fruit purees and flax seed can be used to substitute for a quantity of fat in a baked product.
- The students will be able to describe the changes in nutritional quality achieved by substituting flaxseed meal (added omega-3 fatty acids) and applesauce (added fiber, vitamins, minerals) in cookies.

Required Materials:

Instructor needs:	Students need:	Volunteers need:
First aid kit	Apron and hair net (1 per student)	Prepare the brownies ahead of time
Classroom norms	Cutting board (1 per group)	*Have the volunteers set up a separate work station for ingredients, the instructor and each group. Place a cutting board with a non-slip liner underneath. Place a recipe and rotate the clean up responsibility at each station. Also, have the volunteers place the student's materials needed for the lesson at each station. This exercise will be repeated for the entire program.
Camera	Non-slip liner (1 per group)	
Kitchen Aid™	Knife (1 per group)	
Recipe (1 per group)	Large mixing bowl (1 per group)	
Clean Up Responsibilities (1 per group)	Small mixing bowl (1 per group)	
Classroom snack (seasonal fruit or vegetable) & drink	Measuring cups and spoons (1 set per group)	
Taste Test worksheet (1 per student)	Nonstick spray	
What are FATS? handout (1 per student)	Sheet pans (1 per group)	
Nutrition Facts Label handout (1 per student)		
Prize for the winner who correctly guesses the secret ingredient in the brownie		

Teacher Preparation:

- Read about the daily snack's nutritional value.
- Read about fat substitutions and omega-3 fatty acid from flaxseed.
- Prepare the reduced-fat and regular baked brownies ahead of time for taste test (can have the volunteers prepare the brownies).
- Bring in an avocado, American Cheese slices, and a grab bag of potato chips.
- Photocopy the Nutrition Facts Labels for avocado, American cheese, and a grab bag of potato chips for the Nutrition Facts Label handout to the class.

Pink Chefs

10 min.	<p>Anticipatory Set:</p> <p>Pass out the Taste Test worksheet. Give each student 2 brownies: A) butter/oil in the recipe and B) applesauce replacing the butter/oil in the recipe. Ask them to taste each brownie and, using the handout, rate them on a scale of 1-4 (1 = not good, 4 = very good) for presentation, taste, and texture. Ask them to write down 2 words describing each brownie. Go around the class allowing each student to describe the brownie they liked the best. Finally, ask the class if they can guess the secret ingredient (applesauce). The person who guesses correctly will receive a prize. Collect the Taste Test worksheets from the students.</p>
5 min.	<p>Step-by-step Procedures:</p> <ol style="list-style-type: none"> 1) SNACK: pass out the daily snack and discuss it's nutritional value. 2) Briefly discuss the previous lessons meal, Vegetable Tofu Stir-Fry with Quinoa. Did their families enjoy it?
10 min.	<ol style="list-style-type: none"> 3) Pass out the "What are FATS?" handout.¹⁻² 4) Go through the What are FATS? handout: <ol style="list-style-type: none"> i) Saturated fats ii) Trans fats iii) Cholesterol iv) Unsaturated fats v) ALTERNATIVE ACTIVITY: explain the fats using chemistry models. b) Pass out the Nutrition Facts Label handout. <ol style="list-style-type: none"> i) What to look for on a Nutrition Facts label: (use the avocado label for the example) <ol style="list-style-type: none"> (1) Total fat (2) Saturated fat (3) Unsaturated fat (4) Discuss the difference in the amount and types of fat in an avocado, 1 slice of American cheese, and a grab bag of potato chips. Which one is the healthiest food?
5 min.	<ol style="list-style-type: none"> 5) Give a brief description of the different methods used for fat substitution in baking: <ol style="list-style-type: none"> a) Replace the solid fat with a fruit puree (apricot, apple, peach). b) Replace the liquid fat (oil) with fruit juice. 6) Through a brief lecture, introduce flaxseed: <ol style="list-style-type: none"> a) Ask the students if they have had flaxseed. What foods could they have consumed with flaxseed? b) How to use flaxseed as a fat substitute. c) The health benefits of using flaxseed:³ <ol style="list-style-type: none"> i) Heart ii) Anti-cancer properties iii) May reduce growth of specific types of tumors in mice iv) Stabilize blood-sugar levels (diabetes) v) Fiber source vi) Omega-3 fatty acids & lignans
10 min.	<ol style="list-style-type: none"> 7) Kitchen demonstration: <ol style="list-style-type: none"> a) How to measure flour, packed brown sugar, and baking powder/baking soda. b) Tell the students to measure the canola oil before the applesauce because the applesauce will slide right out. c) Dice apples: show students how to dice an apple. d) Describe the added fiber value of cooking apples with the skin still on the apple.
60 min.	<ol style="list-style-type: none"> 8) Make the recipe!⁴ <ol style="list-style-type: none"> a) Using the Kitchen Aid™ food mixer: <ol style="list-style-type: none"> i) The instructor should supervise the use of the Kitchen Aid™. ii) Have all the groups cooperatively work together when mixing the ingredients.
20 min.	<ol style="list-style-type: none"> 9) Clean up. 10) Taste cookies. Discuss taste, presentation and texture. Yummy!

Pink Chefs

Plan for Independent Practice:

- Baking cookies; substitute the fat in a recipe with a fruit puree or fruit juice; use flaxseed in a recipe

Closure:

- What did you learn?
- Fat does not necessarily equal flavor!
- What are the health benefits of eating flaxseed?

Chef Challenge:

- Tell your family one health benefit of eating flaxseed.
- Try substituting butter or oil in a baked product at home!

Did you follow the session plan with discussion points? YES / NO

Did you make any alterations to the session plan? YES / NO

If yes, what were these?

Were there any problems with the session?

Do you have any further comments about the session?

¹American Heart Association. (2008). Know Your Fats. Accessed: September 20,2008.
<http://americanheart.org>

²U.S. Food and Drug Administration, Center for Food Safety and Applied Nutrition. (2006). Trans Fat Now Listed with Saturated Fat and Cholesterol on the Nutrition Facts Label. Accessed: September 20, 2008. <http://www.cfsan.fda.gov/>

³Wikipedia, the Free Encyclopedia. (2008). Flax. Accessed: May 12, 2008.
<http://en.wikipedia.org/wiki/Flax>

⁴All Recipes. Oatmeal Chocolate Chip Cookies: Modified by Kerri Parker. Accessed: September 22, 2008. <http://www.allrecipes.com/Recipe/Oatmeal-Chocolate-Chip-Cookies-I/Detail.aspx>

CAL POLY

Building Better Bodies

What Are Fats?

Pink Chefs

What are fats? Are they all bad? Fats make up a major group of nutrients that play vital roles in the health of our bodies.

★ **WE CANNOT SURVIVE WITHOUT FAT.**

Here are some functions of fat:

- Maintain healthy skin & hair
- Protecting our organs
- Maintaining body temperature
- Keeping all of our cells healthy
- Provide energy for daily activities

TYPES OF FATS:

1. **Saturated Fat:** these fats have no double bonds and are fully **SATURATED** with hydrogen atoms. They are found mostly in foods from animals, but also some plants. Foods from animals include:

- Beef, veal
- Lamb
- Pork
- Poultry fat
- Butter, cream, milk, cheeses and other dairy products made with whole and 2% milk

★ All of these foods contain dietary cholesterol!

2. **Trans Fats:** these fats are created in an industrial process that adds hydrogen to liquid vegetable oils to make them more solid, a process called **"HYDROGENATION."** These fats are found primarily in processed foods, such as:

- Chips and crackers
- Cookies, cakes and doughnuts
- French fries
- Margarines and shortenings

★ **Trans fats are used to preserve food so they have a longer shelf-life.**

3. **Cholesterol:** these fats are an important part of a healthy body because it's used for producing cell membranes and some hormones, and serves other needed bodily functions. **IT'S NORMAL TO HAVE CHOLESTEROL!!** But, too much cholesterol is a major risk for Coronary Heart Disease. Foods with cholesterol are:

HIGH CHOLESTEROL:

- Beef kidney and liver
- Cream cheese, cheddar cheese, butter
- Sponge cake
- Eggs

LOW CHOLESTEROL:

- All vegetables, fruits, nuts, seeds, grains, vegetable oils

★ **MODERATION** is key to a healthy life!

4. **Unsaturated Fats:** these fats have one or more double bonds in the fatty acid chain.

- **MONOUNSATURATED:** contains one double bond
- **POLYUNSATURATED:** contains 2 or more double bonds

These are the fats that provide our body with the nutrients we need to live healthfully. Foods that contain unsaturated fats:

- Most plant-based oils
- Fish
- Avocados
- Almonds, walnuts, peanuts, pistachios, hazelnuts

Ways to cut fat from your diet:

1. Choose options that are **grilled, barbecued, broiled, or steamed.**
2. Choose lean meats, such as: **turkey breast, lean ham, chicken breast, and lean roast beef.**
3. Choose lean ground beef that reads at least **90% lean.**
4. Choose **low-fat** or **fat-free** dairy products.
5. When baking, try some **healthy substitutions:**
 - **Replace** half all-purpose white flour with whole wheat flour.
 - Add 1/2 cup of **flaxseed** to a recipe for more fiber.
 - **Use applesauce, fruit puree, or baby food** for half of the butter or oil in a recipe.

Aim to reduce the amount of **SATURATED & TRANS FATS** in your diet by replacing butter, shortening and hard margarines with **UNSATURATED FATS** such as healthy oils, nuts and fish.

CAL POLY

Building Better Bodies

TASTE TEST

Rate the brownies on a scale of 1-4

1 = not good, 2 = fair, 3 = good, 4 = very good

Also, list 2 words that describe the brownies;
for example: moist, dry, cakey, fudgy, chewy.

A

Presentation

Taste

Texture

List 2 words:

B

Presentation

Taste

Texture

List 2 words:

OATMEAL CHOCOLATE CHIP APPLE COOKIES

Ingredients:

• 1/2 cup canola oil		• 1/4 cup ground flaxseed (flax meal)	
• 1/4 cup unsweetened apple sauce		• 1 tsp. baking powder	
• 1 cup light brown sugar, packed		• 1 tsp. baking soda	
• 1 egg		• 1/4 tsp. salt	
• 1/2 tsp. vanilla		• 1 1/2 cups quick cooking oats	
• 3/4 cup whole wheat flour	• 1 cup apples, diced		
• 3/4 cup white all-purpose flour	• 1 cup chocolate chips (or cinnamon chips)		

Directions:

- 1) Preheat oven to 350°F.
- 2) In a large mixing bowl, beat oil, applesauce, brown sugar, egg and vanilla until creamy.
- 3) In a separate bowl, stir together flours, flax meal, baking powder, baking soda and salt. Add to oil mixture, beating until blended.
- 4) Fold in oats, diced apples, and chocolate/cinnamon chips. Drop by teaspoons onto cookie sheet coated with nonstick spray.
- 5) Bake at 350°F for 10 minutes or until lightly browned on top. Cool. **Enjoy!!!**

Recipe modified by Kerri Parker

***Reduce the fat in a baked product by substituting the oil or butter with fruit juice or fruit puree. Flaxseed is another great fat substitution.**

CAL POLY

Building Better Bodies

Flaxseed is loaded with Omega-3 fatty acids and fiber.

Pink Chefs

Lesson 8: Calcium

Age of learners: 12-14

Time allotted: 2 hours

General Goal(s):

- This lesson teaches students about the nutritional benefits of calcium for strong bones, how to read and compare the calcium percentages of different milk products using Nutrition Facts Labels, and how to distinguish the difference between milk products based on taste, texture, and consistency.

Specific Objectives:

- The students will identify foods in the milk group.
- The students will identify the health and nutrition benefits from eating foods rich in calcium.
- The students will analyze food labels to determine which foods contain the most calcium.
- The students will compare food labels to determine which calcium-rich foods are lowest in fat.
- The students will use a standard taste test methodology to assess non-fat, 1%, 2%, and whole milks in terms of taste, texture, and consistency.
- The students will apply the new skills of *al dente* and making a *roux* through culinary practice.

Required Materials:

Instructor needs:	Students need:	Volunteers need:
First aid kit	Apron and hair net (1 per student)	Have the volunteers get the water ready for the macaroni.
Classroom norms	Cutting board (1 per group)	1 Pot with lid
Camera	Non-slip liner (1 per group)	*Have the volunteers set up a separate work station for ingredients, the instructor and each group. Place a cutting board with a non-slip liner underneath. Place a recipe and rotate the clean up responsibility at each station. Also, have the volunteers place the student's materials needed for the lesson at each station. This exercise will be repeated for the entire program.
Recipe (1 per group)	Knife (1 per group)	
Clean Up Responsibilities (1 per group)	Large mixing bowl (1 per group)	
Classroom snack (seasonal fruit or vegetable) & drink	Large saucepan (1 per group)	
Plastic cups (4 per student)	Measuring cups and spoons (1 set per group)	
The Powerful Girl Quiz (1 per student)	13 x 9 baking dishes (1 per group)	
What's on the Label? handout (1 per student)		
What's the Score? worksheet (1 per student)		
Milk Taste Test worksheet (1 per student)		
Wanted: Stronger Bones handout (1 per student)		
1 Prize for the winner of the quiz		

Teacher Preparation:

- Read about the snack of the day.
- Read about *al dente*, a *roux*, and nutmeg.
- Bring in samples of fat-free, 1%, 2%, and whole milk. For lactose intolerance, bring Lactate milk.

10 min.

Anticipatory Set:

Pass out The Powerful Girl Quiz.¹ See how much they really know about calcium and strong bones. Allow the students to fill out the quiz. Then, go over the answers. The student who had the highest number of correct answers receives a prize.

Pink Chefs

3 min.	Step-by-step Procedures: 1) SNACK: pass out the daily snack and discuss the snack's nutritional value. 2) Have a discussion about the previous lesson: Oatmeal Chocolate Chip Apple Cookies! What did their families think?
10 min.	3) Use the "Lesson 3: Get Your Calcium-Rich Foods" as a guide. ² a) ACTIVITY: What's on the Label? i) Pass out What's on the Label? handout. ² (1) Discuss the food labels ii) Pass out What's the Score? worksheet. ² iii) Have the students complete the worksheet. Do the worksheet with the students.
5 min.	b) GROUP ACTIVITY: i) Pass out the Milk Taste Test worksheet. ii) Have all of the students do the taste test with fat-free, 1%, 2%, and whole milk. iii) Give the students time to fill out the taste test worksheet. iv) Discuss then collect the worksheets.
2 min.	4) Pass out the Wanted: Strong Bones handout. ³ a) Have a brief discussion using this handout. Talk about lactose intolerance, 9 essential nutrients, how to incorporate dairy into your diet, etc.
10 min.	5) Kitchen demonstrations: a) <i>Al dente</i> : firm to the bite. b) <i>Roux</i> : a cooked mixture of equal parts butter or other fat and flour used to thicken sauces, soups, etc. This is how you can start any basic sauce or soup. c) Nutmeg: demonstrate how to grate the nutmeg. Explain how nutmeg is a common spice used in cheese sauces. d) Have students model how to mince garlic and chop parsley.
60 min.	6) Make the recipe! ⁴
20 min.	7) Clean up. Divide up the leftovers.

Plan for Independent Practice:

- Using the new cooking techniques: cooking pasta *al dente* and making a *roux* for a sauce or soup.
- Using spices (eg. Nutmeg) in the whole form for the most flavor and nutritional benefits.

Closure:

- What did you learn?
- Ask your family if they know the definition of *al dente* and *roux*.

Chef Challenge:

- Make pasta *al dente* for your family!

Did you follow the session plan with discussion points? YES / NO

Did you make any alterations to the session plan? YES / NO

If yes, what were these?

Were there any problems with the session?

Do you have any further comments about the session?

Pink Chefs

¹Centers for Disease Control and Prevention: Division of Nutrition, Physical Activity and Obesity. (2008). The Powerful Girl Quiz. Accessed: September 15, 2008.
http://www.girlhealth.gov/bones/quizzes/quiz_pg.html

²United States Department of Agriculture: Food and Nutrition Service. (2008). Team Nutrition. MyPyramid for Kids Lesson 3: Get Your Calcium-Rich Foods. Accessed: September 21, 2008.
http://www.fns.usda.gov/tn/resources/mpk3_lesson3.pdf

³National Dairy Council: 3 A Day. (2007). Wanted: Stronger Bones. Accessed: September 21, 2008.
http://www.3aday.org/SiteCollectionDocuments/PDFs/Wanted_Stronger_Bones.pdf

⁴Food Network. 3-Cheese Macaroni and Cheese. Accessed: May 27, 2008.
<http://www.foodnetwork.com>

CAL POLY

Building Better Bodies

Lesson 3:

Get Your Calcium-Rich Foods

Lesson Highlights

Objectives

Students will:

- Identify foods in the milk group.
- Identify the health and nutrition benefits from eating foods rich in calcium.
- Analyze food labels to determine which foods contain the most calcium.
- Compare food labels to determine which calcium-rich foods are lowest in fat.

Curriculum Connections:

Math, Health, Science

Student Skills Developed:

- Reading charts
- Thinking skills – making comparisons
- Math computation

Materials:

- *What's on the Label?* handout for each student
- *What's the Score?* worksheet for each student
- Samples of fat-free, 1%, 2%, and whole milk
- Four plastic glasses (for each student trying the taste test)
- Marker

Activity: What's on the Label?

Make the following points about the health benefits of calcium-rich foods:

- Diets that are rich in lowfat and fat-free milk and milk products help build and maintain bone mass.
- Students their age especially need to drink milk, because this is when their bone mass is being built.

Now pass out *What's on the Label?* handout. Tell students that food labels give them important information about the nutritional value of the food. Discuss the following information with the students:

- Ask students to look for the words "Serving Size" on the labels. In the case of milk, the serving size is 8 fluid ounces – 1 cup.
- Next, have students find first the number of calories in a single serving of the food. Each of the first four labels is for an 8 fluid ounce glass of milk; yet they have a very different number of calories per serving. Why? Because of the fat and sugar content. Look at the calorie content for 1% chocolate milk. It is higher than the calorie content for whole milk. The extra calories come from sugar and chocolate.
- At the bottom of the food label, students will find some numbers followed by percent signs. This is where calcium is listed. Use the % Daily Value (DV) column when possible: 5% DV or less is low, 20% DV or more is high.

Pass out the *What's the Score?* worksheet. Have students complete the chart at the top of the page, filling in numbers from the four nutrition labels for milk. Later, check students' answers.

Next, have students use *What's on the Label?* to help them complete the questions on *What's the Score?* Check student answers and discuss.

Group Activity: Taste Test

Bring in samples of fat-free, 1%, 2%, and whole milk. With a marker, label four plastic glasses A, B, C, and D. Without showing students what you are doing, pour a small amount of the four types of milk into the glasses. (Prepare one set of glasses for each student participant.)

Now have a student come up to taste each of the four milks. Describe the tastes. Rate each. Repeat with other students trying the taste test.

Later, have students talk about how they can reduce the fat they consume by switching the milk they drink. If they usually drink whole milk, they should switch gradually to 2% milk, then to 1% milk, and finally to fat-free milk.

Lunchroom Link:

Does your school have vending machines? Do they offer milk for sale? If not, perhaps your class could start a campaign to add fat-free or lowfat milk to the choices available in your school vending machines.

Name: _____

What's on the Label?

Milk fat-free

Nutrition Facts	
Serving Size 8 fl oz (245g)	
Servings Per Container 8	
Amount Per Serving	
Calories 90	Calories from Fat 0
%Daily Value*	
Total Fat 0g	0 %
Saturated Fat 0g	0 %
Trans Fat 0g	0 %
Cholesterol <5mg	0 %
Sodium 130mg	5 %
Total Carbohydrate 12g	4 %
Dietary Fiber 0g	0 %
Sugars 12g	
Protein 8g	
Vitamin A 10% • Vitamin C 4%	
Calcium 30% • Iron 0%	
* Percent Daily Values are based on a 2,000 calorie diet.	

Milk 1%, chocolate

Nutrition Facts	
Serving Size 8 fl oz (245g)	
Servings Per Container 8	
Amount Per Serving	
Calories 170	Calories from Fat 20
%Daily Value*	
Total Fat 2.5g	4 %
Saturated Fat 1.5g	8 %
Trans Fat 0g	0 %
Cholesterol 5mg	2 %
Sodium 190mg	8 %
Total Carbohydrate 29g	10 %
Dietary Fiber 1g	5 %
Sugars 27g	
Protein 8g	
Vitamin A 10% • Vitamin C 6%	
Calcium 30% • Iron 4%	
* Percent Daily Values are based on a 2,000 calorie diet.	

Milk 2%

Nutrition Facts	
Serving Size 8 fl oz (245g)	
Servings Per Container 8	
Amount Per Serving	
Calories 130	Calories from Fat 45
%Daily Value*	
Total Fat 5g	8 %
Saturated Fat 3g	15 %
Trans Fat 0g	0 %
Cholesterol 20mg	7 %
Sodium 125mg	5 %
Total Carbohydrate 13g	4 %
Dietary Fiber 0g	0 %
Sugars 12g	
Protein 8g	
Vitamin A 10% • Vitamin C 4%	
Calcium 30% • Iron 0%	
* Percent Daily Values are based on a 2,000 calorie diet.	

Milk whole

Nutrition Facts	
Serving Size 8 fl oz (245g)	
Servings Per Container 8	
Amount Per Serving	
Calories 150	Calories from Fat 70
%Daily Value*	
Total Fat 8g	12 %
Saturated Fat 5g	25 %
Trans Fat 0g	0 %
Cholesterol 35mg	11 %
Sodium 125mg	5 %
Total Carbohydrate 12g	4 %
Dietary Fiber 0g	0 %
Sugars 12g	
Protein 8g	
Vitamin A 6% • Vitamin C 4%	
Calcium 30% • Iron 0%	
* Percent Daily Values are based on a 2,000 calorie diet.	

Vanilla ice cream

Nutrition Facts	
Serving Size 1/2 cup (65g)	
Servings Per Container 14	
Amount Per Serving	
Calories 140	Calories from Fat 70
%Daily Value*	
Total Fat 7g	11 %
Saturated Fat 4.5g	23 %
Trans Fat 0g	0 %
Cholesterol 20mg	6 %
Sodium 40mg	2 %
Total Carbohydrate 15g	5 %
Dietary Fiber 0g	0 %
Sugars 15g	
Protein 3g	
Vitamin A 4% • Vitamin C 0%	
Calcium 10% • Iron 0%	
* Percent Daily Values are based on a 2,000 calorie diet.	

American cheese

Nutrition Facts	
Serving Size 1 slice (19g)	
Servings Per Container 24	
Amount Per Serving	
Calories 60	Calories from Fat 40
%Daily Value*	
Total Fat 4.5g	7 %
Saturated Fat 2.5g	13 %
Trans Fat 0g	0 %
Cholesterol 15mg	5 %
Sodium 250mg	10 %
Total Carbohydrate 1g	0 %
Dietary Fiber 0g	0 %
Sugars 1g	
Protein 3g	
Vitamin A 4% • Vitamin C 0%	
Calcium 20% • Iron 0%	
* Percent Daily Values are based on a 2,000 calorie diet.	

Fruit-flavored yogurt

Nutrition Facts	
Serving Size 6 ounces (170g)	
Servings Per Container 1	
Amount Per Serving	
Calories 170	Calories from Fat 15
%Daily Value*	
Total Fat 1.5g	2 %
Saturated Fat 1g	5 %
Trans Fat 0g	0 %
Cholesterol 10mg	3 %
Sodium 125mg	5 %
Total Carbohydrate 33g	11 %
Dietary Fiber 0g	0 %
Sugars 30g	
Protein 6g	
Vitamin A 0% • Vitamin C 0%	
Calcium 20% • Iron 0%	
* Percent Daily Values are based on a 2,000 calorie diet.	

Cottage cheese

Nutrition Facts	
Serving Size 1/2 cup (119g)	
Servings Per Container 4	
Amount Per Serving	
Calories 90	Calories from Fat 20
%Daily Value*	
Total Fat 2.5g	4 %
Saturated Fat 1.5g	8 %
Trans Fat 0g	0 %
Cholesterol 15mg	5 %
Sodium 410mg	17 %
Total Carbohydrate 6g	2 %
Dietary Fiber 0g	0 %
Sugars 5g	
Protein 11g	
Vitamin A 4% • Vitamin C 0%	
Calcium 8% • Iron 0%	
* Percent Daily Values are based on a 2,000 calorie diet.

Name: _____

What's the Score?

Here is a way to compare foods to see which foods are the best choices for you. Answer the questions below for these four foods, using *What's on the Label?*

	Fat-free milk	1% chocolate milk	2% milk	Whole milk
1. What is the serving size for this item?				
2. Is the serving size realistic? (<i>Is this how much you would normally eat/drink?</i>)				
3. How many total calories in one serving?				
4. How many total grams of fat in one serving?				
5. What percent of calcium in one serving?				

Based on this information, which type of milk offers the most calcium with the lowest fat?

Now look at *all* the labels on the page. Answer these questions:

1. If Manuel drinks 8 fluid ounces of 1% chocolate milk and eats 6 ounces of fruit-flavored yogurt, how much calcium has he had? _____

How many grams of fat? _____

2. Which food item on the sheet has the least calcium with the highest amount of fat?

3. Which food item on the sheet has the most calcium with the lowest amount of fat?

What's the Score? Answer Key

Here is a way to compare foods to see which foods are the best choices for you. Answer the questions below for these four foods, using *What's on the Label?*

	Fat-free milk	1% chocolate milk	2% milk	Whole milk
1. What is the serving size for this item?	1 cup (8 fl oz)	1 cup (8 fl oz)	1 cup (8 fl oz)	1 cup (8 fl oz)
2. Is the serving size realistic? <i>(Is this how much you would normally eat/drink?)</i>				
3. How many calories in one serving?	90	170	130	150
4. How many total grams of fat in one serving?	0	2.5	5	8
5. What percentage of calcium in one serving?	30% DV	30% DV	30% DV	30% DV

Based on this information, which type of milk offers the most calcium with the lowest fat?

Answer: Fat-free

Now look at *all* the labels on the page. Answer these questions:

1. If Manuel drinks 8 fluid ounces of 1% chocolate milk and eats 6 ounces of fruit-flavored yogurt, how much calcium has he had? **Answer: 50% DV**

How many grams of fat? **Answer: 4 grams**

2. Which food item on the sheet has the least calcium with the highest amount of fat?

Answer: Vanilla ice cream

3. Which food item on the sheet has the most calcium with the lowest amount of fat?

Answer: Fat-free milk

Powerful Girl Calcium Quiz

Are you as bone-health savvy as you think?

Yeah, you're smart about school, guys, and the real scoop on all the hot bands. But do you know enough about powerful bones? Take this quiz to see how much you really know. If you score high enough, you just might win a **PRIZE!!!**

- 1) You're babysitting your little brother or sister and you have to make a healthy dinner with vegetables. What should a bone-smart babysitter pick?
 - a) French Fries — Potatoes are a vegetable, right?
 - b) Broccoli — With low-fat cheese for even more calcium.
 - c) Skip the vegetable, mom will never know.
 - d) Lima Beans — Your brother or sister can't stand them.
- 2) Your best friend's mom — a total health fanatic — says "OK" to a sleepover party, but only with a healthy party menu. With bone health in mind, you suggest...
 - a) Fried chicken.
 - b) Potato chips and more potato chips.
 - c) Bok choy and tofu — feast on Chinese or Japanese food.
 - d) Forget it — a sleepover with healthy food is lame.
- 3) Mom and dad are away! You could drink soda all day, but for strong bones you...
 - a) Slurp up the soda anyway.
 - b) Drink fruit punch.
 - c) Go for fat-free or low-fat milk and orange juice with added calcium.
 - d) Drink diet soda.
- 4) It's been storming for days and you're tired of being shut in. What is the best way to get some weight-bearing physical activity?
 - a) Forget it and catch up on TV reruns.
 - b) Find a comfy chair and chat on the phone.
 - c) Do some stretches while watching movies. At least it's some activity.
 - d) Clear some space and jump rope.

CAL POLY

Building Better Bodies

- 5) You totally love your swim team, but to get some weight-bearing physical activity, too, you...
- Add gymnastics or soccer to your routine.
 - Quit. If your bones aren't getting a workout, why bother?
 - Switch to skateboarding.
 - One thing at a time! Swimming is the only sport for you.
- 6) You're eating out with friends after a basketball game. Everyone orders chicken tenders and soda, but for healthy bones you order...
- Chicken tenders and soda too — why be difficult?
 - Chicken tenders and low-fat milk — a yummy way to get calcium.
 - Nothing — there's no healthy fast food.
- 7) Your parents think you get all the physical activity you need in PE class, so they don't worry about physical activities at home. What should you do?
- Find time after school for bone-healthy activities like karate or playing Frisbee.
 - Just take a little "exercise vacation" to think about it.
 - Let it be — your folks must be right.
- 8) Your best pal won't drink milk or eat yogurt or cheese, either. But calcium is important for strong bones. What can you do?
- It's really none of your business.
 - There aren't any other foods with calcium.
 - Tell her about other foods with calcium like broccoli and orange juice with added calcium.
 - Who needs calcium? Isn't weight-bearing physical activity enough?
- 9) You're psyched. You're in the school play, and you've landed the leading role. But afternoon rehearsals mean less physical activity. How can you fit it all in?
- No big deal — you're walking around the stage.
 - Take a brisk walk, jog around the neighborhood, or do an aerobics video in the morning.
 - Give up the part in the play.
- 10) Summer vacation at an amusement park! Your brother wants to grab dinner at the corn dog stand. And for calcium?
- Choose grilled cheese and a smoothie instead.
 - Go along with your brother, why bother with calcium?
 - Just go home — why should your brother get HIS way?

TASTE TEST

Rate the milk on a scale of 1-4

1 = not good, 2 = fair, 3 = good, 4 = very good

Also, list 2 words that describe the milk;
for example: creamy, refreshing, smooth, crisp.

Non-fat

Taste

Texture

Consistency

List 2 words

1%

Taste

Texture

Consistency

List 2 words

2%

Taste

Texture

Consistency

List 2 words

Whole

Taste

Texture

Consistency

List 2 words

CAL POLY

Building Better Bodies

WANTED: STRONGER BONES

A healthy meal plan including 3-A-Day of Dairy – a total of three servings of calcium-rich milk, cheese or yogurt every day – combined with physical activity, helps build strong bones to last a lifetime.

With 9 essential nutrients such as, protein, potassium, phosphorus, vitamins A, B₁₂ and D, riboflavin and niacin, in addition to calcium, milk, cheese and yogurt provide a unique combination of nutrients that pack a powerful punch!

The dairy case has something for everyone – with fat free and reduced fat varieties, families can choose milk, cheese or yogurt products to meet everyone's taste and nutritional needs.

The best way to get the calcium you need is by eating and drinking foods that naturally contain calcium. Milk and other dairy products are good sources of calcium; they naturally offer the most calcium per serving. Other sources of calcium include tofu, legumes, some green leafy vegetables and calcium-fortified orange juice.

VISIT
WWW.3ADAY.ORG

and sign-up for the *Get 3!* e-newsletter that's filled with family-friendly recipes, health expert advice, nutrition news and freebie offers.

Print a Dairy Tracker to help your children tally your family's daily dairy intake.

STRONGER BONES ARE AS EASY AS 1-2-3!

1. Begin Mornings with Dairy

- Parents, be a role model. Enjoy milk with your children every morning – not only will you teach them well, but you'll do your body good too!
- Jump-start your child's day with a smart breakfast by blending lowfat yogurt and fruit for a homemade smoothie.

2. Flavorful Fun for Families

- Studies show that elementary school kids drink 28 percent more milk when offered in "cool" flavors and packages.¹
- Stock up on calcium-packed grab-and-go snacks such as fruit yogurts, cheese cubes and single-serve containers of lowfat milk.

3. Make Meal Time Family Time

- Eating together as a family promotes good eating habits² and improves overall nutrition.³
- Involve kids in creative meal planning. Kids are more likely to eat foods they help prepare.

Nutritious and Delicious

On average, teens drink only 1 glass of milk a day and drink twice as much soda as milk.⁴ Flavored milk is one way children can enjoy great taste and receive nutrients their bodies need. One serving of chocolate milk provides the same combination of 9 essential nutrients as white milk. Kids who drink flavored milk, overall consume more milk and calcium without increasing sugars or total fat in their overall diet.⁵

The Lowdown on Lactose Intolerance

If you think you or your child may be lactose intolerant, talk to your doctor or registered dietitian. Most individuals with lactose intolerance can enjoy yogurt and hard cheeses that are naturally low in lactose, such as Cheddar and Swiss. They can also drink lactose-reduced or lactose-free milk.

American Academy
of Family Physicians

American Dietetic Association
Your link to nutrition and health.sm

American Academy
of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN[®]

National Medical Association

NATIONAL DAIRY COUNCIL[®]

¹ The School Milk Pilot Test, American School Food Service Association & The National Dairy Council, September 2002.

² National Yogurt Association Web site, <http://www.aboutyogurt.com/kidsNutrition/brainBreakfasts.asp>.

³ USDA Continuing Survey of Food Intakes by Individuals, 1994-96, 1998.

⁴ School Milk Makes the Grade: Student Nutritional Status Improves with Enhanced Milk Product, National Dairy Council, 2002.

⁵ The School Milk Pilot Test, American School Food Service Association & The National Dairy Council, September 2002.

4-CHEESE MACARONI AND CHEESE

Ingredients:

• 1 Tbsp. salt		• 2 Tbsp. ground black pepper
• 1 pound elbow macaroni		• 2 tsp. nutmeg
• 6 Tbsp. butter		• 1 pound cheddar, shredded (or lactose free cheese)
• 6 Tbsp. all-purpose flour		• 1 (5 ounce) package of 3-cheese blend
• 3 1/2 cups milk (or lactate)		• 1 cup bread crumbs
• 1/2 cup heavy cream (or silken tofu)		• 2 Tbsp. parsley, chopped
		• 2 cloves garlic, minced

Directions:

- 1) Save half of the 3-cheese blend package for the bread crumbs. Mix with bread crumbs. Set aside.
- 2) Preheat oven to 325°F. In a large pot, fill with water and bring to a boil. Add 3 pinches of salt and macaroni. Cook until al dente. Drain.
- 3) In a large saucepan, melt butter. Sauté garlic for 2 minutes. Sprinkle flour over butter and cook 2-3 minutes, whisking until a roux forms.
- 4) Add cold milk and whisk until dissolved. Cook sauce on medium-low heat until thick and bubbly. Add heavy cream, remaining cheese, salt, pepper, and nutmeg.
- 5) Add cooked macaroni to cheese mixture. Mix. Place macaroni mixture into a 13 X 9 baking dish coated with nonstick spray.
- 6) Sprinkle bread crumb mixture over macaroni. Bake for 12-15 minutes. Top with parsley. Cool. Enjoy!!!

**Great sources of calcium are milk, cheese, yogurt, tofu, soymilk, nuts, dark green vegetables, fortified cereals and juice.*

CAL POLY

Building Better Bodies

Try and eat 1300 mg of calcium per day.

Pink Chefs

Lesson 9: Breakfast of Champions!

Age of learners: 12-14

Time allotted: 2 hours

General Goal(s):

- This lesson teaches students the physiological, cognitive, and nutritional benefits of why it is important to eat breakfast.

Specific Objectives:

- The students will explain the physiological, cognitive, and nutritional benefits of eating breakfast through reading the Breakfast of Champions! handout and completing the Power Up Your Day! worksheet as a group.
- The students will be able to describe 1 nutritional value from each of the breakfast and snack food products made in class through culinary practice.

Required Materials:

Instructor needs:	Students need:	Volunteers need:
First aid kit	Apron and hair net (1 per student)	*Have the volunteers set up a separate work station for ingredients, the instructor and each group. Place a cutting board with a non-slip liner underneath. Place a recipe and rotate the clean up responsibility at each station. Also, have the volunteers place the student's materials needed for the lesson at each station. This exercise will be repeated for the entire program.
Classroom norms	Cutting board (1 per group)	
Camera	Non-slip liner (1 per group)	
Recipe (1 per group)	Knife (1 per group)	
Clean Up Responsibilities (1 per group)	Large mixing bowl (1 per group)	
Classroom snack (seasonal fruit or vegetable) & drink	Large saucepan (1 per class)	
Blender	Measuring cups and spoons (1 set per group)	
Kitchen Aid™	12 Muffin tin (2 for the class)	
Family Fiesta RSVP handout (1 per student)	Paper cups for muffin tin	
Breakfast of Champions! handout (1 per student)	13 x 9 baking pan (1 for granola bars)	
Power Up Your Day! worksheet (1 per student)		
30 Steps to a Healthier You! handout (1 per student)		

Teacher Preparation:

- Discuss the Family Fiesta with the Site Director. Find out the details of the Fiesta: where is it going to be held (inside or outside), time, day, etc. Invite the Site Director to the class for a discussion.
- Read about the nutritional benefits of the recipes: fat substitutes (flaxseed, applesauce), fiber, oatmeal in the granola bars, etc.
- Read about the nutritional benefits of the snack.

5 min.

Anticipatory Set:

Breakfast Quiz!¹ Ask the class the question and allow them to gesture true or false (thumbs up = true, thumbs down = false). Then, read the answer to the class.

Pink Chefs

10 min.	Step-by-step Procedures: 1) SNACK: pass out the snack for the day and discuss the nutritional value. 2) Briefly discuss the macaroni and cheese. Did their families like it? Would you make macaroni and cheese from scratch? 3) Have a discussion about the Family Fiesta with the Site Director. a) Pass out the Family Fiesta RSVP handout. Tell the students to give the invitation to their parents and bring it back to the next class with a head count.
10 min.	4) Use Nutrition Education Programs: Power Up Your Day with Breakfast as a guide for the lesson. ² 5) Pass out the Breakfast of Champions! handout. ²⁻³ a) Go through the handout. b) Have the students read each section and have discussions: i) Power Up Your Day with Breakfast: Why is it important to eat breakfast? ii) Jump Start Your Brain with These Combinations: What other combinations would make a great quick and easy breakfast? iii) Tips on Eating a Quick and Healthy Breakfast: Can you think of any other tips on eating a quick and healthy breakfast?
10 min.	c) WORKSHEET: pass out the worksheet after going over the handout. ² i) Have the students break up into groups and fill out the worksheet ii) Go over the answers iii) QUESTION TIME from guide
5 min.	6) HANDOUT: pass out the 30 Steps to a Healthier You handout. ⁴ a) Discuss snacks from the handout: 8, 14 (how much popcorn makes 1 serving? Discuss whole grains), 18, 27, etc. b) Discuss exercise from the handout: 15 (if you don't use a stationary bike, what could you do while watching T.V.?), 17, etc. i) Demonstrate in the class push-ups off the desk and sit-ups. ii) Have the class participate.
10 min.	7) Kitchen demonstration: a) Briefly discuss the recipes; all of the recipes could be a breakfast or snack item. b) Nutritional benefits: highlight what is good about each food. i) Smoothie: tofu = protein; banana = potassium (good for muscles); etc. ⁵ ii) Apple Coffee Cake = flaxseed = omega-3 fatty acids, fiber (good for working the intestinal muscles); etc. ⁶ Allow the students making the Apple Coffee Cake to use the Kitchen Aid™ with adult supervision. iii) Granola bars = oatmeal (whole grains, fiber), etc. ⁷
50 min.	8) Make the recipes! ⁵⁻⁷ If there is enough time, have the students rotate stations so they can make all of the recipes.
20 min.	9) Clean up!

Plan for Independent Practice:

- Making healthful easy to grab breakfast and snack foods; incorporating breakfast into their diet

Closure:

- What did you learn?
- Ask the students "What was your favorite food we made today?" Then informally quiz them about the nutritional benefits of that food item. Acknowledge all answers, but make sure you touch the highlighted points for each food.

Chef Challenge:

- Make your family breakfast!

Did you follow the session plan with discussion points? YES / NO

Did you make any alterations to the session plan? YES / NO

Pink Chefs

If yes, what were these?

Were there any problems with the session?

Do you have any further comments about the session?

¹Leeds, Grenville and Lanark District Health Unit. (2008). Nutrition: Breakfast Quiz. Accessed: September 20, 2008. <http://www.healthunit.org/nutrition/lifecycle/child/breakquiz.htm>

²University of Minnesota Extension Service.(2004). Nutrition Education Programs: Power Up Your Day with Breakfast. Accessed: September 19, 2008. <http://extension.umn.edu/family/W00024.pdf>

³Lifespan Organization. (2008). Breakfast: Are You a Champion? Top 10 reasons to eat breakfast. Accessed: September 18, 2008. <http://www.lifespan.org/services/nutrition/articles/breakfast.htm>

⁴Alice Henneman, University of Nebraska-Lincoln Extension in Lancaster County. 30 MyPyramid Steps to a Healthier You. Accessed: September 19, 2008. <http://www.lancaster.unl.edu/food/30steps.pdf>

⁵Tyler Florence, Food Network. Silken Smoothie. Accessed: May 27, 2008. <http://www.foodnetwork.com>

⁶Cooks Recipes. Apple Nut Coffee Cake: Modified by Kerri Parker. Accessed: September 22, 2008. http://www.cooksrecipes.com/breakfast/apple-nut_coffee_cake_recipe.html

⁷Oregon State University Extension Service. (2007). Healthy Recipes: Breakfast No-Bake Granola Bars. Accessed: May 25, 2008. <http://www.healthyrecipes.oregonstate.edu>

CAL POLY

Building Better Bodies

Power Up Your Day with Breakfast

At school today your child learned why it is important to eat a healthy breakfast. He or she also learned how to make healthy food choices for breakfast. Do you want a bright start to your day? Want energy to get up and go? Well then, eat breakfast! Eating a morning meal (breakfast) helps to "break the fast" from the night before. It gives your body the energy and nutrients it needs to start the day. Breakfast gives your brain a head start, too. It's true! Studies show that children who eat breakfast have more energy, are more alert and generally perform better in school than children who don't eat breakfast. They're able to concentrate better and tend to have fewer absences.

Be a good role model for eating breakfast. Make breakfast a priority in your house. Let your children see you eating breakfast or grabbing something quick to eat on the way to work. It will be a higher priority for children if it is for adult family members!

Breakfast can be any nutritious food. Foods from each of the main food groups can be eaten as part of a breakfast meal. Be creative! Try trading some of those traditional breakfast food choices for some of these quick, easy to prepare combinations.

Jump Start Your Brain with These Combinations:

- Fruit and whole grain cereal added to yogurt
- Leftover pizza and a glass of milk
- Crackers with cheese cubes and a glass of 100-percent fruit juice
- Leftover macaroni and cheese and vegetable juice
- Fruit smoothies (a blend of yogurt, milk and fruit) and whole grain toast
- Bread sticks with peanut butter and apple slices

If you have little time for breakfast, take some grab-n-go foods along to eat later.

- Fresh fruit or cut up raw vegetables and a whole grain breakfast cereal bar
- Crackers with a dab of peanut butter and a banana
- Cheese cubes or string cheese and dried fruit such as cherries or raisins
- 100-percent fruit juice boxes and a small, re-sealable plastic bag with dry whole grain cereal or trail mix
- Carton of yogurt

Power Up Your Day!

Our family is learning why it is important to eat breakfast. Eating breakfast helps us concentrate and learn in school, feel good until lunchtime, and have energy for work and play. Name some healthy breakfast foods that are easy and fun.

First, list some traditional breakfast foods.

1. _____
2. _____
3. _____

Next, list some healthy alternatives.

1. _____
2. _____
3. _____

Now list the benefits of eating breakfast.

Breakfast Food Word Scramble

1. Z A P I Z
2. R U Y G O T
3. H E S E E C
4. A N P T E U R T E B U T
5. I K M L
6. L R E C A E

{See answers on page

Question Time

Child: Why is it important that we eat breakfast? (For example, compare days when you do and don't eat breakfast. Any differences in energy to play, concentration, or how you feel?)

Adult: How many days in the past week did we eat breakfast? (Count the number of days in the past week for both the adult and child.)

Child: What are some of the things that keep us from eating breakfast? (Hint: Work and school schedules, bus comes too early, not hungry, no time, etc.?)

Adult: What are some things that we could do to eat breakfast more often? (Get things ready the night before, get up earlier, plan breakfasts ahead of time?)

Child: Why is it important that I see you eating breakfast every day? (Hint: What makes a child want to eat breakfast as often as adults do?)

Healthy Breakfast Beverages

Milk is a healthy beverage because it has nutrients like calcium and protein. 100% juice has more nutrients than juice drinks. You can make sure you choose a healthy beverage for breakfast by having milk in a glass or on cereal or 100% juice. You may also prefer to make a healthy fruit smoothie for breakfast with milk and fruit. Sugar sweetened drinks have "empty calories" because they have few nutrients and are not a healthy choice for breakfast. Remember to power up your day with a healthy beverage!

Our Family Goals:

**Include a healthy
beverage for breakfast.
Make sure that children
see adults eating
breakfast everyday.**

**(Agree on another family
goal and write it here.)**

As Your Child Grows

Parents can create a positive outlook on breakfast by showing children that they enjoy a morning meal. Children need positive encouragement from **positive role models**. Children who see their parents eat breakfast are more likely to eat breakfast too.

When families eat breakfast together, they can use the time to talk and interact with each other. Sitting down together for even a short time can be important for families to get connected and talk about what is happening in their lives. At the breakfast table, family members can check schedules and support each other in daily activities.

Breakfast can be a fun activity for parents and children on days when they do not have to rush out the door. Try a new recipe for a healthy breakfast alternative to spice up your routine.

On the Web

Check out these Web sites with your child:

Quaker Oats: <http://www.quakeroatmeal.com/StriveforFive/Index.cfm>

National Dairy Council: <http://www.nutritionexplorations.org/kids/activities/detective.asp>

Answers to puzzle on page 2:

1. pizza, 2. yogurt, 3. cheese, 4. peanut butter,
5. milk, 6. cereal

Cheese Quesadillas

Ingredients:

- 2 8-inch flour tortillas
- 1/2 cup grated cheddar or Monterey Jack cheese
- 1 tablespoon chopped vegetables such as onions, tomatoes, peppers, green chili peppers (optional)
- Salsa (optional)

Procedure:

1. All food preparers must wash their hands with warm water and soap for 20 seconds before starting to prepare this recipe. Be sure that all work surfaces are clean.
 2. Preheat oven to 350° F.
 3. Place one tortilla on a baking pan or cookie sheet. Sprinkle with grated cheese and vegetables, if desired.
 4. Cover with the second tortilla and bake in the oven for 10 minutes or until cheese melts. (Note: If preparing this recipe in a microwave oven, heat the tortillas on 100-percent power in the microwave for 30 to 60 seconds or until the cheese melts.) Cut into quarters and serve with salsa.
- *Makes 4 servings*

UNIVERSITY OF MINNESOTA
Extension
SERVICE

The University of Minnesota Extension Service is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, color, creed, religion, national origin, sex, age, marital status, disability, public assistance status, veteran status, or sexual orientation.

Information on pages 1 and 4 adapted from the Jump Into Fun and Fitness Program, Michigan State University Extension, Spring 2004.

Breakfast of Champions!

Pink Chefs

Power Up Your Day with Breakfast

What does the word breakfast mean?

Breaking the fast; the first meal of the day.

★ Why eat Breakfast?

- 1) Breakfast restores sugar levels after up to 12 hours of not eating.
- 2) It is extremely difficult to get all your necessary daily nutrients without breakfast.
- 3) People who eat breakfast are more successful at losing weight and sticking to a diet.
- 4) People who eat breakfast are more mentally and physically efficient for longer periods during the day.
- 5) Athletes who skip breakfast train less effectively.
- 6) Eating breakfast can raise metabolism as much as 10%.
- 7) People who eat breakfast regularly are more likely to rate their health as excellent or good.
- 8) Eating a bigger meal in the morning and a smaller meal at night optimizes your daily energy levels.
- 9) Many people who have skipped breakfast snack on foods high in fat and sugar.
- 10) Breakfast is delicious!

Jump Start Your Brain with These Combinations:

- Fruit and whole grain cereal added to yogurt
- Leftover pizza and a glass of milk
- Crackers with cheese cubes and a glass of 100% fruit juice
- Leftover macaroni and cheese and vegetable juice
- Fruit smoothies (a blend of yogurt, milk, and fruit) and whole grain toast
- Bread sticks with peanut butter and apple slices

If you have little time for breakfast, take some **grab-n-go foods** along to eat later.

- Fresh fruit or cut up raw vegetables and a whole grain breakfast cereal bar
- Crackers with a dab of peanut butter and a banana
- Cheese cubes or string cheese and dried fruit such as cherries or raisins

Tips on eating a Quick and Healthy Breakfast:

- 1) Pick up portable breakfast items at the grocery store:
 - fruit
 - low-fat yogurt
 - whole grain breakfast bars
 - granola bars
- 2) Get up 15 minutes earlier. You can prepare and eat a healthy meal in 15 minutes or less.
- 3) Prepare your breakfast the night before. Cut up some fruit and set out the cereal on the counter.
- 4) Try and eat dinner before 7 or 8 pm the night before so your body has plenty of time for the food to digest.

Breakfast is the most important meal of the day!

CALPOLY

Building Better Bodies

30 MyPyramid Steps to a Healthier You

By Alice Henneman, MS, RD & Extension Educator

MyPyramid's slogan "Steps to a Healthier You" indicates we can benefit from taking daily small steps to improve our diet and lifestyle. Here are some steps from <http://mypyramid.gov> to get started.

<p>1 On the Internet, go to http://mypyramid.gov and calculate your personalized "My Pyramid Plan."</p> <p>MyPyramid.gov STEPS TO A HEALTHIER YOU</p>	<p>2 Order veggie toppings for your pizza like mushrooms, green peppers and onions.</p>	<p>3 Eat foods and beverages low in "added sugars." Naturally occurring sugars such as those which are in milk and fruits do not count as added sugars.</p>	<p>4 Vary your fruit choices. Fruits differ in nutrient content.</p>	<p>5 Make most of your choices whole or cut-up fruit rather than juice, for the benefits dietary fiber provides.</p>	<p>6 Select vegetables with more potassium often, such as sweet potatoes, white potatoes, winter squash, tomato products, beet greens, spinach, dry beans and split peas.</p>
<p>7 Choose grain products which name one of the following whole-grain ingredients first on the ingredient list: brown rice, bulgur, graham flour, oatmeal, whole-grain corn, whole oats, whole rye, whole wheat, wild rice.</p>	<p>8 Dried fruits make a great snack. They're easy to carry and store well. Because they're dried, 1/4 cup is equal to 1/2 cup of other fruits.</p>	<p>9 Sauces or seasonings can add calories, fat and sodium to vegetables. Use the Nutrition Facts label to compare the calories and % Daily Value for fat and sodium in plain and seasoned vegetables.</p>	<p>10 Walking, gardening, briskly pushing a baby stroller, climbing the stairs, playing soccer or dancing are all good examples of being active. For health benefits, physical activity should add up to at least 30 minutes a day.</p>	<p>11 Try a main dish salad for lunch. Go light on the salad dressing.</p>	<p>12 For a change, try brown rice or whole-wheat pasta.</p>
<p>13 If you avoid milk because of lactose intolerance, try using a lactose-free milk, consuming the enzyme lactase before consuming milk or using a calcium fortified soy or rice beverage. <i>Bioavailability of calcium from nondairy foods may vary.</i></p>	<p>14 Popcorn, a whole grain, can be a healthy snack with little or no added salt and butter.</p>	<p>15 Do exercises or pedal a stationary bike while watching television.</p>	<p>16 Many vegetables taste great with a dip or dressing. Try a low-fat salad dressing with raw broccoli, cauliflower, red and green peppers or celery sticks.</p>	<p>17 Physical activity may include short bouts of moderate-intensity activity. The accumulated total is what is important and can be accumulated through three to six 10-minute bouts over the course of a day.</p>	<p>18 Color is not an indication of a whole grain. Bread can be brown because of molasses or other added ingredients. Read the ingredient list to see if it is a whole grain.</p>
<p>19 Frozen juice bars (100% juice) make healthy alternatives to high-fat snacks.</p>	<p>20 Park farther from your destination (work, shopping, etc.) and walk the rest of the way.</p>	<p>21 Look for fish rich in omega-3 fatty acids, such as salmon, trout and herring.</p>	<p>22 Stock up on frozen vegetables for quick and easy cooking in the microwave.</p>	<p>23 Substitute whole wheat for up to half of the flour in pancake, waffle, muffin or other flour-based recipes.</p>	<p>24 If you drink lattes or cappuccinos — ask for them with fat-free (skim) milk.</p>
<p>25 Refrigerate or freeze perishables, prepared food and leftovers within TWO hours.</p>	<p>26 Use the Nutrition Facts label and choose grain products with a higher % Daily Value (%DV) for fiber — the %DV for fiber is a good clue to the amount of whole grain in the product.</p>	<p>27 Select fruits with more potassium often, such as bananas, prunes and prune juice, dried peaches and apricots, cantaloupe, honeydew melon and orange juice.</p>	<p>28 For dessert, make pudding with fat-free or low-fat milk.</p>	<p>29 Replace a coffee break with a brisk 10-minute walk. Ask a friend to go with you.</p>	<p>30 For fresh fruit salads, mix apples, bananas or pears with acidic fruits like oranges, pineapple or lemon juice to keep them from turning brown.</p>

Family Fiesta!!!

Families

Come join us for a

FAMILY FIESTA

Prepared by the Pink Chefs!

Dinner Menu:
Lasagna!

Homemade
Garlic Bread!
YUMMY!

RSVP

of people _____

Where?

Mesa Middle School
Arroyo Grande

2555 Halcyon Rd., 93420

December 11th @ 5:30 pm

With Chef Julie Chessen

Sponsored by:

- Cal Poly Building Better Bodies
- Food Bank Coalition of San Luis Obispo County
- Bright Futures After School Program
- Arroyo Grande Community Hospital
- Latino Outreach Council

CAL POLY

Building Better Bodies

Fiesta Familiar!!!

¡Las Familias

Vienen nos unen para un
FIESTA FAMILIAR Preparado
por los Jefes de cocina Rosa!

El Menú de cena:

¡Lasaña!

RSVP

de personas _____

Pan Casero de
Ajo
¡DELICIOSO!

Dónde?

Mesa Middle School
Arroyo Grande

2555 Halcyon Rd., 93420

11 de diciembre @ 5:30 de la tarde

Con Cocinera Julie Chessen

Patrocinado Por:

- Cal Poly Building Better Bodies
- Arroyo Grande Community Hospital
- Latino Outreach Council
- Bright Futures After School Program
- Food Bank Coalition of San Luis Obispo County

CAL POLY

Building Better Bodies

BREAKFAST NO-BAKE GRANOLA BARS

Ingredients:

- 2 1/2 cups rice cereal
- 2 cups oatmeal
- 1/2 cup raisins
- 1/2 cup brown sugar, firmly packed

- 1/2 cup light corn syrup
- 1/2 cup peanut butter
- 1 tsp. vanilla

Directions:

- 1) In a large mixing bowl, add the rice cereal, oatmeal, and raisins. Mix.
- 2) In a skillet, add the brown sugar and corn syrup. Over medium-high heat, bring mixture to a boil stirring constantly.
- 3) Once boiling, remove saucepan from heat.
- 4) Add the peanut butter and vanilla into the sugar mixture in the saucepan. Blend until smooth.
- 5) Pour the peanut butter mixture over the cereals and raisins. Mix well.
- 6) Press the mixture into a baking pan. When cool, cut into 18 bars. Enjoy!!!

Nutrition Facts

Serving Size 1 " x 3 " (42g)
Servings Per Container 18 bars

Amount Per Serving

Calories 160 **Calories from Fat 40**

% Daily Value*

Total Fat 4.5g **7%**

Saturated Fat 1g **5%**

Trans Fat 0g

Cholesterol 0mg **0%**

Sodium 70mg **3%**

Total Carbohydrate 29g **10%**

Dietary Fiber 2g **8%**

Sugars 12g

Protein 4g

Vitamin A 2% • Vitamin C 4%

Calcium 2% • Iron 10%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories	2,000	2,500
Total Fat	Less Than	65g	80g
Saturated Fat	Less Than	20g	25g
Cholesterol	Less Than	300mg	300 mg
Sodium	Less Than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:

Fat 9 • Carbohydrate 4 • Protein 4

**Make these granola bars on the weekend and then grab and go during the week. Pair the granola bar with a piece of fruit and a glass of milk; you will function better and learn more in school.*

CAL POLY

Building Better Bodies

This recipe is a good source of iron, which carries oxygen in our blood.

SILKEN SMOOTHIE

Ingredients:

- 1 cup mixed berries, frozen
- 1/2 banana, frozen
- 1 cup crushed pineapple
- 2 tablespoons honey
- 1 cup soymilk
- 1 teaspoon vanilla extract

Directions:

- 1) Combine all ingredients in a blender.
- 2) Puree until smooth.
- 3) Serve. **Enjoy!!!**
- 4) If the smoothie is too thick, add more soy milk.

*Soymilk is made from ground soybeans and mixed with water to form a milk-like substance. This product can substitute milk for those who are dairy sensitive.

CAL POLY

Building Better Bodies

1 cup soy milk = 1 cup of vegetable

SWEET POTATO BISCUITS

Prep Time: 15 minutes
Cook Time: 20 minutes
Servings: 15 biscuits

Ingredients:

- 2 c. cooked, mashed sweet potatoes
- 1 stick butter, melted
- 1 1/4 c. fat-free milk
- 4 c. self-rising flour
- Pinch baking soda
- 3 Tbsp. sugar

Directions:

- 1) Preheat oven to 400°F.
- 2) Mix together the sweet potatoes, butter and milk until well blended.
- 3) Stir in the flour, baking soda and sugar.
- 4) Shape the dough into a ball and knead about 8 to 10 times on a well-floured board.
- 5) Roll the dough out 1-inch thick and cut with a 2-inch biscuit cutter.
- 6) Bake in a greased baking pan in a 400-degree oven for 15 to 20 minutes or until brown.
- 7) Try the biscuits with honey! **Enjoy!!!**

***Try adding 1/2 cup cheddar cheese and 1 Tbsp. thyme for a fresh twist.**

CAL POLY

Building Better Bodies

Sweet potatoes are rich in complex carbohydrates, fiber, vitamin A & C, iron and calcium.

Pink Chefs

Lesson 10: Meal Planning and Budgeting

Age of learners: 12-14

Time allotted: 2 hours

General Goal(s):

- This lesson teaches students how to plan and purchase a meal on a budget.

Specific Objectives:

- The students will describe how to shop smart through group discussion.
- The students will develop a meal on a budget through cooperative learning and a group activity.
- The students will be able to name two ways to stretch a meal that they prepare.

Required Materials:

Instructor needs:	Students need:	Volunteers need:
First aid kit	Apron and hair net (1 per student)	Place the potatoes in the oven ahead of time on sheet pans.
Classroom norms	Cutting board (1 per group)	*Have the volunteers set up a separate work station for ingredients, the instructor and each group. Place a cutting board with a non-slip liner underneath. Place a recipe and clean up responsibility at each station. Also, have the volunteers place the student's materials needed for the lesson at each station. This exercise will be repeated for the entire program.
Camera	Non-slip liner (1 per group)	
Recipe (1 per group)	Knife (1 per group)	
Clean Up Responsibilities (1 per group)	Large mixing bowl (1 per group)	
Laptop computer	Large saucepan (1 per group)	
Projector	Measuring cups and spoons (1 set per group)	
Classroom snack (seasonal fruit or vegetable) & drink	Colander (1 per group)	
Nutrition Jeopardy Questions (1 per student)	Pot with a lid (1 per group)	
Get Smart as You Shop (1 per student)		
MyPyramid worksheet (1 per group)		

Teacher Preparation:

- Have the volunteers place the potatoes in the oven ahead of time. Lightly drizzle the potatoes with olive oil, salt, and pepper and place in the oven at 375°F for about 1 hour.
- ALTERNATIVE LESSON PLAN (web based): use the Meals Matter web site (www.mealsmatter.org) to lead a lesson on the Internet. Each student would need a computer to work on, or a projector and a laptop to work through the web site as a class.
- Bring in newspapers with grocery store coupon clippings.
- Bring in Monopoly money or printed money for the students to grocery shop.
- Read the nutritional value of the daily snack.

10 min. Anticipatory Set:

On the Meals Matter web site, go through the Food Personality Quiz.¹ What is a food personality? Do our personalities differ? What is your food personality? On the home page, go under tools and select Food Personality Quiz. Take the quiz! Go through the quiz a couple times to read the different food personalities.

Pink Chefs

5 min.	Step-by-step Procedures: <ol style="list-style-type: none">1) SNACK: pass out the daily snack and have a brief discussion.2) Discuss the breakfast and snack items made from the previous lesson. Did they eat them on the go for breakfast? Did their families enjoy the recipes?3) Collect the Family Fiesta RSVP invitations. If students forgot the invitation, collect an approximate head count for the fiesta.4) NUTRITION JEOPARDY QUESTIONS: pass out the questions to the students.² Let them know that we will be playing Nutrition Jeopardy during the next class and to read these questions to study for the game.
30 min.	<ol style="list-style-type: none">5) GET SMART AS YOU SHOP: pass out this handout to the class.³<ol style="list-style-type: none">a) Questions: What are some things you could do before shopping to save money? Clip coupons, eat, etc.b) Discuss this handout with the students. Have the students read aloud.6) CLASS ACTIVITY: Menu planning and budgeting<ol style="list-style-type: none">a) Split the students up into groups.b) Pass out the MyPyramid worksheet to each group.⁴c) Give each group a newspaper with the coupon clippings.d) Explain to the students that they will be shopping for a family of four. They are given \$20 to plan a meal for dinner. They do not have to use all the money, the less the better.e) Have the students use the MyPyramid worksheet to write down their grocery list for the meal. Then, have the students list the food choice in the food group. Is it a balanced meal? How much did they spend per person?f) Have each group briefly discuss their meal and how much was spent.g) ALTERNATIVE ACTIVITY: if the class has access to individual computers for the Internet, use the Meals Matter web site.¹
5 min.	<ol style="list-style-type: none">7) Kitchen demonstration:<ol style="list-style-type: none">a) Briefly discuss the recipe of the day: Easy Skillet Chili.⁵<ol style="list-style-type: none">i) This meal cost \$1.07 per person!ii) Add beans and water to stretch the recipe.iii) Chop onion: have a student model how to chop. Have all the students practice modeling how to chop an onion at their sections.
50 min.	<ol style="list-style-type: none">8) Make the recipe!
20 min.	<ol style="list-style-type: none">9) Clean up!

Plan for Independent Practice:

- Stretch a meal for a family by adding beans and water.

Closure:

- What did you learn?
- Name two ways to stretch a meal.

Chef Challenge:

- This week, help your family plan and budget a meal by selecting coupon clippings.
- Explore the Meals Matter web site to get meal planning and budgeting ideas.

Did you follow the session plan with discussion points? YES / NO

Did you make any alterations to the session plan? YES / NO

If yes, what were these?

Were there any problems with the session?

Pink Chefs

Do you have any further comments about the session?

¹Meals Matter. Food Personality Quiz. Accessed: September 18, 2008. <http://www.mealsmatter.org>

²Kathryn Naylor, North Carolina State University Cooperative Extension: Mountain Horticulture Crops Research and Extension Center. (2005). Teaching Nutrition through Games: Food Guide Pyramid Jeopardy. Accessed: May 14, 2008.
<http://www.ces.ncsu.edu/fletcher/programs/nutrition/games/game-pyramid-jeopardy.shtml>

³Centers for Disease Control and Prevention. Get Smart as You Shop. Accessed: September 15, 2008.
http://www.fruitsandveggiesmatter.gov/download/Get_Smart_Shopping.pdf

⁴United States Department of Agriculture. (n.d.). MyPyramid Worksheet: Check how you did today and set a goal to aim for tomorrow. Accessed: September 21, 2008.
http://www.mypyramid.gov/downloads/worksheets/Worksheet_2000_18.pdf

⁵Oregon State University Extension Service. (2006). Healthy Recipes: Easy Skillet Chili. Accessed: April 15, 2008. <http://www.healthyrecipes.oregonstate.edu>

CAL POLY

Building Better Bodies

Get Smart As You Shop

Fruits and vegetables can fit into any budget. The following tips can help you save money as you strive to eat more fruits and vegetables.

Remember, fresh, frozen, canned, and dried types all count toward getting more fruits and veggies.

Before You Shop

- **Look for store ads** and use them when planning your weekly grocery list. Plan to buy the fruits and vegetables that are on sale and use them in meals and snacks that week.
- **Plan your weekly meals and snacks** before you go shopping. Look through your freezer and pantry to see what fruits and vegetables you have at home that you can use.
- **Think variety!** Make a point to try a new fruit or vegetable each week.

After You Shop

- **Use fresh fruits and vegetables** within a few days after shopping and use frozen and canned fruits and vegetables later in the week.
- As you are putting your groceries away, **chop some fruits and vegetables** and place in bags or storage containers. Keep them in the refrigerator so they will be ready to grab for lunches and snacks.

While You Shop

- **Purchase fresh fruits and vegetables in season** when they tend to be less expensive.
- **Buy whole fruits and vegetables** instead of pre-cut or pre-packaged forms which tend to be more expensive.
- **Consider frozen and canned** if fresh are too expensive. Frozen and canned fruits and vegetables keep longer than fresh.
- **Shop smartly!** Look out for added sugar in canned fruits; look for fruit packed in water or juice. Choose veggies with low sodium.
- **Consider generic or store brands** instead of name brands. Store brands tend to cost less and have similar taste and nutrition.
- If your budget allows, **buy larger bags of frozen fruits and vegetables**. They may be a better bargain and you can use what you need and keep the rest for later use.
- **Buy canned or dried beans** and use them in recipes instead of meat which is more expensive. Traditional recipes made with meat such as chili, soups, and Mexican dishes like burritos are delicious with beans.

Visit www.fruitsandveggiesmatter.gov for more great tips and recipes

Seasonal Chart for Fresh Fruits and Vegetables (shaded area indicates peak season)

* Many of the listed fruits and vegetables are available year round, but their cost will be higher and quality may be less.

Fruit/ Vegetable	January	February	March	April	May	June	July	August	September	October	November	December	Tips
Apples													Choose firm apples with no soft spots.
Avocado													Ripe fruit will be slightly firm, but yield to gentle pressure.
Banana													Select bananas that are firm; with no bruises.
Bell Pepper													Choose peppers with firm skin, with no wrinkles.
Broccoli													Select bunches that are dark green.
Cantaloupe													Select melons that are slightly golden with a light fragrant smell.
Carrots													Pick carrots that are deep orange in color. Avoid carrots that are cracked or wilted.
Corn													Husks should be green, tight, and fresh looking. The ear should have tightly packed rows of plump kernels.
Cucumber													Choose firm cucumbers with rich green color and no soft spots.
Eggplant													Pick symmetrical eggplant; avoid oversized eggplants with may be tough and bitter.
Grapes													Look for firm, plump, well-colored clusters.
Lettuce													Choose fresh, crisp leaves with no wilting.
Mushrooms													Mushrooms should be firm, moisture-free (not dry), and blemish-free.
Onion													Onions should feel dry and solid with no soft spots or sprouts.
Orange													Pick oranges that are firm, heavy for their size and have bright colorful skins.
Peach													Choose peaches that are soft to the touch with a fragrant smell.
Pear													Ripe pears will yield slightly to gently pressure a the stem end.
Strawberries													Strawberries should be dry, firm and well shaped and be a bright shade of red.
Summer Squash													Look for squash that are firm with bright, glossy exteriors.
Sweet Potato													Choose firm, dark, smooth sweet potatoes.
Tomato													Select plump tomatoes with smooth skins, free

Pink Chefs
Nutrition Jeopardy Questions

Meat Matters:

- 100 What nutrients do we get from meat foods?
A. Protein
- 200 Name two non-meat foods from the meat group.
A. Nuts, eggs, peanut butter, dry beans, soy products
- 300 Why is the meat group in such a small box?
A. We need only a small amount of food from the meat group each day.
- 400 What are two soy bean products we used in class?
A. Tofu and soy milk

Great Grains:

- 100 Besides bread, name two things from the bread group
A. Rice, pasta, cereal, crackers
- 200 Why is the bread group in the largest box?
A. We should eat more from it.
- 300 Do potatoes belong in the bread group?
A. No
- 400 Why do our bodies need 6 - 11 servings from the bread, cereal, rice and pasta group?
A. To help provide energy from carbohydrates

Veggie Vitals:

- 100 Name 2 vegetables that were included in the chicken salad recipe.
A. Celery, scallions, tomato, spinach
- 200 What plant used in class is a complete protein?
A. Soybeans, quinoa
- 300 How many servings of vegetables do we need every day?
A. 3-5
- 400 How much is in one serving of vegetables?
A. ½ cup cooked or chopped / 1 cup raw leafy

Fat Facts:

- 100 Do we need fat in our diet?
A. Yes
- 200 What 3 healthful fats did we use in class?
A. Avocado, flaxseed, olive oil
- 300 Name 2 things that can be used for substituting fat in a recipe.
A. Fruit puree and fruit juice, flaxseed
- 400 What is one function of dietary fats?
A. Maintains healthy skin and hair, protection, maintains body temperature, keeps all of our cells healthy, provide energy

Food Safety:

- 100 While washing your hands, what song should you sing and for how long?
A. Happy Birthday, 20 seconds
- 200 Name two ways to extinguish a kitchen fire.
A. Cover the fire with a lid, smother with baking soda, put out with a fire extinguisher, get out of the house and call 911.
- 300 What does PASS stand for?
A. Pull, aim, squeeze, sweep
- 400 What does cross-contamination mean and what are two common sources of transfer in food borne illness?
A. The physical movement or transfer of harmful bacteria from one person, object or place to another. Food, people, equipment, and work surfaces.

CAL POLY

Building Better Bodies

MyPyramid Worksheet

Check how you did today and set a goal to aim for tomorrow

Write in Your Choices for Today	Food Group	Tip	Goal Based on a 2000 calorie pattern.	List each food choice in its food group*	Estimate Your Total
<div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div>	GRAINS	Make at least half your grains whole grains	6 ounce equivalents (1 ounce equivalent is about 1 slice bread, 1 cup dry cereal, or ½ cup cooked rice, pasta, or cereal)	<div></div> <div></div> <div></div>	<div></div> ounce equivalents
<div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div>	VEGETABLES	Try to have vegetables from several subgroups each day	2 ½ cups Subgroups: Dark Green, Orange, Starchy, Dry Beans and Peas, Other Veggies	<div></div> <div></div> <div></div>	<div></div> cups
<div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div>	FRUITS	Make most choices fruit, not juice	2 cups	<div></div> <div></div> <div></div>	<div></div> cups
<div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div>	MILK	Choose fat-free or low fat most often	3 cups (1 ½ ounces cheese = 1 cup milk)	<div></div> <div></div> <div></div>	<div></div> cups
<div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div>	MEAT & BEANS	Choose lean meat and poultry. Vary your choices—more fish, beans, peas, nuts, and seeds	5 ½ ounce equivalents (1 ounce equivalent is 1 ounce meat, poultry, or fish, 1 egg, 1 T. peanut butter, ½ ounce nuts, or ¼ cup dry beans)	<div></div> <div></div> <div></div>	<div></div> ounce equivalents
<div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div>	PHYSICAL ACTIVITY	Build more physical activity into your daily routine at home and work.	At least 30 minutes of moderate to vigorous activity a day, 10 minutes or more at a time.	<div></div> <div></div> <div></div>	<div></div> minutes

*Some foods don't fit into any group. These "extras" may be mainly fat or sugar—limit your intake of these.

How did you do today? ☐ Great ☐ So-So ☐ Not so Great

My food goal for tomorrow is: _____

My activity goal for tomorrow is: _____

EASY SKILLET CHILI

This meal cost
\$ 1.07 per person!!

Ingredients:

- 1 pound ground meat—beef, chicken or turkey
- 1 onion, chopped
- 2 teaspoons chili powder
- 1 can tomatoes (14.5 ounce), chopped with juice
- 2 cans beans (15 ounce), drained
- 1 can tomato soup (10.75 ounce)
- Water, stretch the recipe
- 1 potato, baked

Directions:

- 1) Sauté meat and onions in skillet, cook on medium heat for 5 minutes while stirring often.
- 2) Drain grease from pan.
- 3) Add chili powder and stir. Cook for 3-5 minutes.
- 4) Add tomatoes, drained beans and tomato soup.
- 5) Add water.
- 6) Stir and simmer for at least 30 minutes. Serve over baked potato. Enjoy!!!
- 7) Refrigerate leftovers within 2 hours.

Nutrition Facts

Serving Size 2/3 cup (245g)
Servings Per Container 12

Amount Per Serving

Calories 160 **Calories from Fat** 40

% Daily Value*

Total Fat 4.5g **7%**

Saturated Fat 1.5g **8%**

Trans Fat 0g

Cholesterol 35mg **12%**

Sodium 480mg **20%**

Total Carbohydrate 18g **6%**

Dietary Fiber 4g **16%**

Sugars 5g

Protein 12g

Vitamin A 6% • **Vitamin C** 15%

Calcium 6% • **Iron** 10%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories	2,000	2,500
Total Fat	Less Than	65g	80g
Saturated Fat	Less Than	20g	25g
Cholesterol	Less Than	300mg	300 mg
Sodium	Less Than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

*This recipe is a good source
of iron, which carries
oxygen to our blood.

CAL POLY

Building Better Bodies

Go to MealsMatter.org for more tips on
meal planning and budgeting.

SWEET POTATO FRENCH FRIES

Ingredients:

• 1 large sweet potato, cut into wedges	• 1/2 tsp. garlic powder
• 1 Tbsp. olive oil	• 1/2 tsp. chili powder
• 1/2 tsp. paprika	• 1/2 tsp. onion powder

Directions:

- 1) Preheat oven to 450°F.
- 2) Cut potato into wedges.
- 3) In a small mixing bowl, mix olive oil, paprika, garlic powder, chili powder and onion powder together.
- 4) Coat potatoes with oil/spice mixture and place on a baking sheet.
- 5) Bake for 45 minutes in preheated oven.

**Reduce the amount of fat by baking the French fries. Using different combinations of seasonings will create a large variety of flavors.*

CAL POLY

Building Better Bodies

Sweet potatoes are rich in complex carbohydrates, dietary fiber, vitamin A & C, iron and calcium.

Pink Chefs

Lesson 11: Nutrition Jeopardy

Age of learners: 12-14

Time allotted: 2 hours

General Goal(s):

- This lesson teaches students how to work together to assemble a family meal using culinary skills, proper timing, and cumulative nutrition information taught throughout the course.

Specific Objectives:

- The students will demonstrate their knowledge of basic nutrition through collectively answering questions from the nutrition jeopardy game.
- The students will illustrate meal timing through correctly sequencing the preparation steps in the lasagna assembly.
- The students will demonstrate cooperative learning and interpersonal, team player skills through creating lasagnas as a group and through clean up activities.

Required Materials:

Instructor needs:	Students need:	Volunteers need:
First aid kit	Apron and hair net (1 per student)	*Have the volunteers set up a separate work station for ingredients, the instructor and each group. Place a cutting board with a non-slip liner underneath. Place a recipe and clean up responsibility at each station. Also, have the volunteers place the student's materials needed for the lesson at each station. This exercise will be repeated for the entire program.
Classroom norms	Cutting board (1 per group)	
Camera	Non-slip liner (1 per group)	
Recipe (1 per group)	Knife (1 per group)	
Clean Up Responsibilities (1 per group)	Large mixing bowl (1 per group)	
Classroom snack (seasonal fruit or vegetable) & drink	Small mixing bowl (1 per group)	
Nutrition Jeopardy board	Large saucepan (1 per group)	
Markers	Measuring cups and spoons (1 set per group)	
Poster Board	13 x 9 x 2-inch baking dish (1 per # of lasagnas)	
Prizes for the winning team	Markers (1 per group)	
A little prize for everyone (1 per student)		
Tin foil and plastic wrap		

Teacher Preparation:

- Read about the nutritional benefits of the daily snack.
- Go over the lasagna recipe.

2-3 min.	Anticipatory Set: Nutrition Jeopardy! ¹
	Step-by-step Procedures:
	1) Before beginning Nutrition Jeopardy, pass out SNACK. 2) SNACK: pass out the snack of the day and briefly discuss the snack's nutritional values.

Pink Chefs

30 min.	3) Split the classroom up into equal groups. 4) Go over the rules of the game: a) Each group assigns a Team Captain. i) The Team Captain is the one responsible for answering the questions. ii) The team can discuss their answer before the Team Captain responds. b) Each team picks a number between 1 and 10. i) The team who goes first is the closest to the number the instructor chose, second, and then third. ii) Keep this order consistent throughout the game. iii) Allow the first team to select a category and value. c) When it is your teams turn, select a category and value. You will have 30 seconds to answer the question. i) If you answer CORRECTLY, your team gets to go again. ii) If you answer INCORRECTLY, the other teams have a chance to answer the question. (1) The team with their hand raised first will have priority for answering the question. (2) This cycle can continue until a team answers the question correctly. (3) Each team can attempt to answer the question once. (4) If no one answers the question correctly, then no one gets the points. d) At the end of the game, the team with the most points wins! They will receive a prize. Also, pass out a little prize to everyone.
5-7 min.	5) Remind the students about the Family Fiesta. a) Discuss the event. i) Explain to the students that they are the hosts: (1) Responsibilities (2) Time (3) Place (4) What they are preparing ii) Go over expectations: (1) Everyone will be preparing the meal (2) The families may take home the leftovers (3) No one may leave the fiesta until the entire kitchen and fiesta sites are cleaned iii) Have the students choose the writing for the cake. iv) Pass around a sign up sheet for day 2 side dishes: (1) Caesar Salad (2) Vegetable Platter (3) Fruit Salad (4) Garlic Cheese Bread (5) Allow one student in the class to be the Team Captain: this person will be reporting to the Head Chef and assigning duties to the other students.
5 min.	6) Go over the lasagna recipe:² a) Discuss the preparation and then the assembly. b) There are little boxes next to each assembly instruction. c) Pass out markers. d) Tell the students that they can mark off each step as they finish. Let them know that they cannot move to the next step until the previous step is finished.
5 min.	7) Kitchen demonstration: a) Zucchini, squash, and eggplant: slice lengthwise b) Dice onion: student and entire class modeling c) Mince garlic: student and entire class modeling
50 min.	8) Create the recipe!²
20 min.	9) Clean up. Refrigerate or freeze lasagnas for the Family Fiesta!

Pink Chefs

Plan for Independent Practice:

- Dish assembly

Closure:

- What did you learn?
- Remind your families about the Family Fiesta!

Chef Challenge:

- Also, ask your family some Nutrition Jeopardy questions and see if they get the questions right.

Did you follow the session plan with discussion points? YES / NO

Did you make any alterations to the session plan? YES / NO

If yes, what were these?

Were there any problems with the session?

Do you have any further comments about the session?

¹Kathryn Naylor, North Carolina State University Cooperative Extension: Mountain Horticulture Crops Research and Extension Center. (2005). Teaching Nutrition through Games: Food Guide Pyramid Jeopardy. Accessed: May 14, 2008.
<http://www.ces.ncsu.edu/fletcher/programs/nutrition/games/game-pyramid-jeopardy.shtml>

²American Beauty. (2002). New World Easy Lasagna. Accessed: September 22, 2008.
<http://americanbeauty.com/recipe/>

MEAT LASAGNA

Ingredients:

• 1 lb. ground beef	• 1 teaspoon Italian herbs
• 3 cups spaghetti sauce	• 1 box oven ready lasagna noodles
• 1 cup tomato sauce	• 4 cups mozzarella cheese, shredded
• 1 3/4 cups ricotta cheese	• 1/4 cup grated Parmesan cheese
• 1 egg, slightly beaten	• chopped onion, 4 cloves of garlic minced

Assembly:

- 1) In 13X9X2-inch baking dish, spread 3/4 cup meat sauce.
- 2) Place 3 pieces uncooked pasta crosswise over sauce. (Pieces should not overlap or touch side of pan since they will expand when baked.)
- 3) Spread about 2/3 cup ricotta mixture evenly over pasta.
- 4) Spread 3/4 cup meat sauce evenly over ricotta covering pasta completely.
- 5) Sprinkle with 1 cup mozzarella cheese.
- 6) REPEAT steps 2 through 5 TWO more times.
- 7) Top with remaining 3 pasta pieces.
- 8) Spread remaining meat sauce completely over pasta; sprinkle with remaining mozzarella and Parmesan cheeses.
- 9) Cover with plastic wrap, then foil. FREEZE or REFRIGERATE for next time.

Preparation:

- 1) In large skillet, add 1 T. oil and sauté onions and garlic
- 2) Add meat to skillet and cook until browned; remove from heat. DRAIN.
- 3) Stir into spaghetti sauce and tomato sauce.
- 4) In separate bowl, stir together ricotta cheese, egg, and Italian herbs.
- 5) Remove 12 pieces of pasta from package.
- 6) Begin to assemble.

Heating Instructions:

REFRIGERATED: 375°F, 40 min.

FROZEN: 375°F, 90 min.

CAL POLY

Building Better Bodies

Makes 10—12 servings

1 cup lasagna = 1 serving

VEGETARIAN LASAGNA

Ingredients:

- 2 lbs. zucchini and squash
- 1 egg, slightly beaten
- 1 eggplant; 1 package mushrooms
- 1 teaspoon Italian herbs
- 3 cups spaghetti sauce
- 1 box oven ready lasagna noodles
- 1 cup tomato sauce
- 4 cups mozzarella cheese, shredded
- 1- 3/4 cups ricotta cheese
- 1/4 cup grated Parmesan cheese
- 4 cloves garlic, 1 onion

Assembly:

- 1) In 13X9X2-inch baking dish, spread 3/4 cup sauce.
- 2) Place 3 pieces uncooked pasta crosswise over sauce. (Pieces should not overlap or touch side of pan since they will expand when baked.)
- 3) Spread about 2/3 cup ricotta mixture evenly over pasta.
- 4) Spread 3/4 cup sauce evenly over ricotta covering pasta completely. Add a layer of vegetables
- 5) Sprinkle with 1 cup mozzarella cheese.
- 6) REPEAT steps 2 through 5 TWO more times.
- 7) Top with remaining 3 pasta pieces.
- 8) Spread remaining sauce completely over pasta; sprinkle with remaining mozzarella and Parmesan cheeses.
- 9) Cover with plastic wrap, then foil. FREEZE or REFRIGERATE for next time.

Heating Instructions:

REFRIGERATED: 375°F, 40 min.

FROZEN: 375°F, 90 min.

Preparation:

- 1) Slice vegetables. Set aside.
- 2) In large skillet, add 1 T. oil and sauté garlic and onions.
- 3) Stir into spaghetti sauce and tomato sauce.
- 4) In separate bowl, stir together ricotta cheese, egg, and Italian herbs.
- 5) Remove 12 pieces of pasta from package.
- 6) Begin to assemble.

CAL POLY

Building Better Bodies

Makes 10—12 servings

1 cup lasagna = 1 serving

Pink Chefs

Lesson 12: Family Fiesta

Age of learners: 12-14

Time allotted: 2 hours

General Goal(s):

- This lesson teaches students how to cater an event for their families by working together to assemble a meal using menu planning and time management.

Specific Objectives:

- The students will learn how much time and effort it takes to cater an event through planning and practical application.
- The students will demonstrate leadership skills through delegating tasks and following direction.

Required Materials:

Instructor needs:	Students need:	Volunteers need:
First aid kit	Apron and hair net (1 per student)	Have the volunteers put the lasagnas in the oven: REFRIGERATED: 375°F, 40 min. FROZEN: 375°F, 1 ½ hours
Classroom norms	Cutting board (1 per group)	*Have the volunteers set up a separate work station for ingredients, the instructor and each group. Place a cutting board with a non-slip liner underneath. Place a recipe and clean up responsibility at each station. Also, have the volunteers place the student's materials needed for the lesson at each station. This exercise will be repeated for the entire program.
Camera	Non-slip liner (1 per group)	
Recipe (1 per group)	Knife (1 per group)	
Clean Up Responsibilities (1 per group)	Large mixing bowl (1-2 per side dish)	
Classroom snack (seasonal fruit or vegetable) & drink	Measuring cups and spoons (1 set per group)	
Paper plates, paper cups, napkins, plastic ware, etc.		

Teacher Preparation:

- Get the lasagnas in the oven before class begins. Frozen lasagnas take 1 hour and 30 minutes.
- Pull the butter out of the refrigerator to soften.

	Anticipatory Set: Family Fiesta!
5 min.	Step-by-step Procedures: 1) SNACK: pass out the snack and briefly discuss the nutritional value. 2) Overview: have a discussion about the program. Allow each student to share with the class what they learned from the program. 3) Briefly discuss how today is the last cooking class. Ask the students to meet with the instructor another time to do an exit interview for the program. 4) Today is the Family Fiesta! a) Remind the students who is the Team Captain. All the students will report to the Team Captain. The Team Captain will report to the Head Chef. b) Remind the students what group/recipe they will be creating.
60 min.	5) Get cooking! Set up the buffet.
40 min.	6) Serve and eat.
20 min.	7) Clean up!

Plan for Independent Practice:

- Meal assembly

Pink Chefs

Closure:

- You all did a great job. Thank you for participating in the Pink Chefs Program! Try planning and preparing a meal for your family at least once a week.

Chef Challenge:

- Set a goal for yourself!

Did you follow the session plan with discussion points? YES / NO

Did you make any alterations to the session plan? YES / NO

If yes, what were these?

Were there any problems with the session?

Do you have any further comments about the session?

CAESAR SALAD

Ingredients:

- 2 hearts of Romaine lettuce
- 2 cups croutons
- 1 cup parmesan cheese
- 1/4 cup Caesar dressing

Directions:

- 1) Cut romaine lettuce into bite size pieces. Add to large mixing bowl.
- 2) Add parmesan cheese, croutons, and dressing.
- 3) Mix. Taste. Does it need pepper?
- 4) Enjoy!!!

**Dark green leafy vegetables are a great source of fiber, folate, and carotenoids, which helps protect against cancers.*

CAL POLY

Building Better Bodies

1 cup raw leafy greens = 1/2 cup vegetables

FRUIT SALAD

Ingredients:

- fruit
- 1 lime
- 1 tablespoon sugar

Directions:

- 1) Dice fruit into bite size pieces.
- 2) Add to large mixing bowl.
- 3) Squeeze lime over fruit and add sugar.
- 4) Mix. Taste.
- 5) Enjoy with some cottage cheese. Yummy!!!

*Adding citrus to a dish will not only add flavor, but it also stops the food from oxidizing (browning).

CAL POLY

Building Better Bodies

1 cup fruit salad = 1 cup of fruit

GARLIC CHEESE BREAD

Ingredients:

- 8 French roll baguettes
- 1 lb. butter
- 4 T. Italian seasoning, 2 T. pepper
- Parmesan cheese
- 6 cloves garlic, minced

Flavored Butter:

- 1) Place butter and herbs into large bowl.
- 2) Add 2 T. of pepper and garlic.
- 3) Mix until blended.

Directions:

- 1) Cut baguette in half, lengthwise.
- 2) Spread 2 T. of **flavored butter** on one half of the baguette.
- 3) Repeat steps 1 & 2 until all the butter is spread on the bread.
- 4) Place bread on a baking sheet with butter side up.
- 5) Sprinkle remaining parmesan cheese over the top of the bread.
- 6) Place in oven at 350°F for about 10 minutes or until golden brown.
- 7) Remove from oven, slice and serve. **Enjoy!!!**

***Try a whole wheat or whole grain baguette!**

CAL POLY

Building Better Bodies

1 slice of bread = 1 ounce equivalence in the breads and cereals category

VEGETABLE PLATTER

Ingredients:

- Vegetables, cut into pieces
- Ranch dressing

Directions:

- 1) Cut vegetables into large pieces.
- 2) Arrange on a platter.
- 3) Pour Ranch dressing into a bowl.
- 4) *Serve. Enjoy!!*

**You can reduce the amount of fat
by using low-fat dressings.*

CAL POLY

Building Better Bodies

1/2 cup raw vegetables = 1/2 cup of vegetables

APPENDIX G

Youth Behavioral Contract

PINK CHEFS

YOUTH BEHAVIOR CONTRACT

The *Pink Chefs* programs hope to increase awareness and the importance of home cooked meals, nutrition, as well as physical fitness. We hope to improve basic nutrition knowledge, increase cooking confidence, and promote healthy exercise habits. Through these various lessons, participants will learn many different skills; for example leadership, academic, social, and cooperative learning.

Attending our after school program is a privilege and certain expectations need apply:

- Follow all rules set forth by the leaders and class.
- All program rules must be followed at all times (including dress codes and kitchen safety).
- Be respectful of other and leaders.

Most importantly, we will ensure all participants enjoy their learning experience in a safe and positive environment. This means all safety rules must be followed to guarantee that all participants receive the same quality level of programming. If any of the rules are not followed then consequences will be enforced.

- *First Offense* - Verbal Warning to Student.
- *Second Offense* - Call Home to Parent.
- *Third Offense* - Suspension from Program for the Rest of the Class Session.

I understand that these rules are important for the safety, structure, and success of the *Pink Chefs* programs, and I will abide by them.

Participants Name _____ Date _____

Participants Signature _____

APPENDIX H

Revised Questionnaires

- i. Pre-questionnaire
- ii. Post-questionnaire

ID# _____ Date _____

Before We Start: Questionnaire for the **Pink Chefs** Cooking is Cool!

How do YOU prepare meals

Q1. In a normal week, how often do you prepare and cook a meal from basic ingredients, from scratch. For example, making a meat and vegetable dish starting with raw vegetables and raw meat? (Please mark one box)

1	Never	4	2-3 times a week
2	Less than once a week	5	4-6 times a week
3	Once a week	6	Daily

Q2. What kind of cooking do you do at the moment? (Please mark yes or no for each question)

Yes	No	
1	0	A) Cook convenience foods and ready-made meals
1	0	B) Put together ready-made ingredients to make a complete meal
1	0	C) Prepare dishes from basic ingredients, from scratch
1	0	D) Don't cook at all
1	0	E) Other, please explain _____

Q3. What keeps you from cooking at home? (Please mark yes or no for each question)

Yes	No	
1	0	A) Cooking a meal takes too much time and effort.
1	0	B) Doing other activities; such as homework, chores, and talk on the phone or watch TV.
1	0	C) Family does not like your cooking.
1	0	D) Family makes fun and says you are doing it wrong.
1	0	E) Family kicks you out of the kitchen because you get in the way.
1	0	F) Your family does not have the ingredients.
1	0	G) Other, please explain _____

Agree or disagree with the following question.....!

Q4. Do you agree or disagree that cooking is cool? (Please mark agree or disagree for each question)

Agree	Disagree	
1	0	A) I like to cook for my family.
1	0	B) Most of my friends like to cook.
1	0	C) Most people in my family think <u>all girls</u> should know how to cook.
1	0	D) Most people in my family think <u>all boys</u> should know how to cook.
1	0	E) Most people in my family think <u>all women</u> should know how to cook.
1	0	F) Most people in my family think <u>all men</u> should know how to cook.

ID# _____ Date _____

How do YOU feel about? (Please select one)

Q5. How important is it to learn to cook for yourself and your family?

1	2	3
Not at all Important	Important	Extremely Important

Q6. How confident do you feel about being able to cook from basic ingredients, from scratch?

1	2	3
Not at all Confident	Confident	Extremely Confident

Q7. How confident do you feel about creating meals using new ingredients? (For example, new fruits, vegetables, spices, herbs.)

1	2	3
Not at all Confident	Confident	Extremely Confident

Q8. How confident do you feel about following a simple recipe?

1	2	3
Not at all Confident	Confident	Extremely Confident

Q9. How confident do you feel about using a knife safely when cooking?

1	2	3
Not at all Confident	Confident	Extremely Confident

Q10. How confident do you feel about planning a meal at low cost?

1	2	3
Not at all Confident	Confident	Extremely Confident

Q11. How confident do you feel about using leftovers to create a new meal?

1	2	3
Not at all Confident	Confident	Extremely Confident

Q10. How confident do you feel about being able to change what your family eats?

1	2	3
Not at all Confident	Confident	Extremely Confident

Q12. How confident do you feel about making a meal for your family?

1	2	3
Not at all Confident	Confident	Extremely Confident

Q13. How confident do you feel about reading a nutrition facts label?

1	2	3
Not at all Confident	Confident	Extremely Confident

Q14. How confident do you feel about knowing different portion sizes for fruits and vegetables?

1	2	3
Not at all Confident	Confident	Extremely Confident

ID# _____ Date _____

What do YOU think? (Please mark one box)

Q16. How many fruits and vegetables do health experts recommend eating every day?

1	None
2	One
3	Two
4	Three

5	Four
6	Five or more
7	Don't Know

Q15. Do you think you will increase the amount of fruit and vegetables you eat in the next 6-12 months?

1	No, definitely not
2	No, probably not
3	Possibly

4	Yes, probably
5	Yes, definitely
6	Don't Know

When planning a meal, which foods are healthiest for YOU.....?
(Please mark one box per line)

Q17. Which source of whole grain is healthiest for you?

1	A white flour tortilla
2	A corn tortilla
3	A slice of white bread

Q18. Which beverage is healthiest for you?

1	A 16-ounce bottle of Gatorade (or other sports drink)
2	A big-gulp cola
3	100% fruit juice

Q19. Which source of fat is healthiest for you?

1	Half an avocado
2	One-ounce slice of American cheese
3	One small 'grab-bag' of potato chips

Q20. Which source of meat is healthiest for you?

1	Grilled, skinless chicken breast
2	Grilled hamburger
3	Fried pork

How do YOU feel about convenience foods?

Q21. How often do you and your family eat out at restaurants/diners together?

1	Never
2	Less than once a week
3	Once a week

4	2-3 times a week
5	4-6 times a week
6	Daily

ID# _____ Date _____

What do YOU usually eat? (Please mark one box per line)

Fruits, Vegetables, and Grains	Less than 1/WEEK	Once a WEEK	2-3 times a WEEK	4-6 times a WEEK	Once a DAY	2+ a DAY
Fruit juice, like orange, apple, grape, fresh, frozen or canned. (Not sodas or other drinks)	1	2	3	4	5	6
How often do you eat any fruit, fresh or canned (not counting juice?)	1	2	3	4	5	6
Vegetable juice, like tomato juice, V-8, carrot	1	2	3	4	5	6
Green salad	1	2	3	4	5	6
Potatoes, any kind, including baked, mashed or french fried	1	2	3	4	5	6
Vegetable soup, or stew with vegetables	1	2	3	4	5	6
Any other vegetables, including string beans, peas, corn, broccoli or any other kind	1	2	3	4	5	6
Fiber cereals like Raisin Bran, Shredded Wheat or Fruit-n-Fiber	1	2	3	4	5	6
Beans such as baked beans, pinto, kidney, or lentils (not green beans)	1	2	3	4	5	6
Dark bread such as whole wheat or rye	1	2	3	4	5	6

Meats & Snacks	1 time per MONTH or less	2-3 times a MONTH	1-2 times a WEEK	3-4 times a WEEK	5+ times per WEEK
Hamburgers, ground beef, meat burritos, tacos	1	2	3	4	5
Beef or pork, such as steaks, roasts, ribs, or in sandwiches	1	2	3	4	5
Fried chicken	1	2	3	4	5
Hot dogs, or Polish or Italian sausage	1	2	3	4	5
Cold cuts, lunch meats, ham (not low-fat)	1	2	3	4	5
Bacon or breakfast sausage	1	2	3	4	5
Salad dressings (not low-fat)	1	2	3	4	5
Margarine, butter or mayo on bread or potatoes	1	2	3	4	5
Margarine, butter or oil in cooking	1	2	3	4	5
Eggs (not Egg Beaters or just egg whites)	1	2	3	4	5
Pizza	1	2	3	4	5
Cheese, cheese spread (not low-fat)	1	2	3	4	5
Whole milk	1	2	3	4	5
French fries, fried potatoes	1	2	3	4	5
Corn chips, potato chips, popcorn, crackers	1	2	3	4	5
Doughnuts, pastries, cake, cookies (not low-fat)	1	2	3	4	5
Ice cream (not sherbet or non-fat)	1	2	3	4	5

Q22. What other foods do you usually eat that were not listed:

ID# _____ Date _____

Details about yourself.....

Please complete the following section about yourself; your responses will be kept strictly PRIVATE and are important to help us to analyze the questionnaire.

Name _____ Date _____

School _____ Age _____

Grade _____ Zip Code _____

Details about ethnic/cultural background.....

To which of these groups do you consider that you belong? (Please mark one box)

1	White
2	Native Hawaiian or Other Pacific Islander
3	Black or African American
4	Hispanic or Latino

5	Asian American
6	American Indian or Alaskan Native
7	Multiracial

Are you allergic to any foods? If so, please list...

Thank you for taking the time to complete this questionnaire!

CAL POLY

Building Better Bodies

ID# _____ Date _____

At the End: Questionnaire for the **Pink Chefs** Cooking is Cool!

How do YOU prepare meals

Q1. In a normal week, how often do you prepare and cook a meal from basic ingredients, from scratch. For example, making a meat and vegetable dish starting with raw vegetables and raw meat? (Please mark one box)

1	Never	4	2-3 times a week
2	Less than once a week	5	4-6 times a week
3	Once a week	6	Daily

Q2. What kind of cooking do you do at the moment? (Please mark yes or no for each question)

Yes	No	
1	0	A) Cook convenience foods and ready-made meals
1	0	B) Put together ready-made ingredients to make a complete meal
1	0	C) Prepare dishes from basic ingredients, from scratch
1	0	D) Don't cook at all
1	0	E) Other, please explain _____

Q3. What keeps you from cooking at home? (Please mark yes or no for each question)

Yes	No	
1	0	A) Cooking a meal takes too much time and effort.
1	0	B) Doing other activities; such as homework, chores, and talk on the phone or watch TV.
1	0	C) Family does not like your cooking.
1	0	D) Family makes fun and says you are doing it wrong.
1	0	E) Family kicks you out of the kitchen because you get in the way.
1	0	F) Your family does not have the ingredients.
1	0	G) Other, please explain _____

Agree or disagree with the following question.....!

Q4. Do you agree or disagree that cooking is cool? (Please mark agree or disagree for each question)

Agree	Disagree	
1	0	A) I like to cook for my family.
1	0	B) Most of my friends like to cook.
1	0	C) Most people in my family think <u>all girls</u> should know how to cook.
1	0	D) Most people in my family think <u>all boys</u> should know how to cook.
1	0	E) Most people in my family think <u>all women</u> should know how to cook.
1	0	F) Most people in my family think <u>all men</u> should know how to cook.

ID# _____ Date _____

How do YOU feel about? (Please select one)

Q5. How important is it to learn to cook for yourself and your family?

1	2	3	4	5
Not at all		Important		Extremely Important
Important				

Q6. How confident do you feel about being able to cook from basic ingredients, from scratch?

1	2	3	4	5
Not at all		Confident		Extremely Confident
Confident				

Q7. How confident do you feel about creating meals using new ingredients? (For example, new fruits, vegetables, spices, herbs.)

1	2	3	4	5
Not at all		Confident		Extremely Confident
Confident				

Q8. How confident do you feel about following a simple recipe?

1	2	3	4	5
Not at all		Confident		Extremely Confident
Confident				

Q9. How confident do you feel about using a knife safely when cooking?

1	2	3	4	5
Not at all		Confident		Extremely Confident
Confident				

Q10. How confident do you feel about planning a meal at low cost?

1	2	3	4	5
Not at all		Confident		Extremely Confident
Confident				

Q11. How confident do you feel about using leftovers to create a new meal?

1	2	3	4	5
Not at all		Confident		Extremely Confident
Confident				

Q12. How confident do you feel about being able to change what your family eats?

1	2	3	4	5
Not at all		Confident		Extremely Confident
Confident				

Q13. How confident do you feel about making a meal for your family?

1	2	3	4	5
Not at all		Confident		Extremely Confident
Confident				

Q14. How confident do you feel about reading a nutrition facts label?

1	2	3	4	5
Not at all		Confident		Extremely Confident
Confident				

Q15. How confident do you feel about knowing different portion sizes for fruits and vegetables?

1	2	3	4	5
Not at all		Confident		Extremely Confident
Confident				

ID# _____ Date _____

What do YOU think? (Please mark one box)

Q16. How many fruits and vegetables do health experts recommend eating every day?

1	None
2	One
3	Two
4	Three

5	Four
6	Five or more
7	Don't Know

Q17. Do you think you will increase the amount of fruit and vegetables you eat in the next 6-12 months?

1	No, definitely not
2	No, probably not
3	Possibly

4	Yes, probably
5	Yes, definitely
6	Don't Know

When planning a meal, which foods are healthiest for YOU.....?
(Please mark one box per line)

Q18. Which source of whole grain is healthiest for you?

1	A white flour tortilla
2	A corn tortilla
3	A slice of white bread

Q19. Which beverage is healthiest for you?

1	A 16-ounce bottle of Gatorade (or other sports drink)
2	A big-gulp cola
3	100% fruit juice

Q20. Which source of fat is healthiest for you?

1	Half an avocado
2	One-ounce slice of American cheese
3	One small 'grab-bag' of potato chips

Q21. Which source of meat is healthiest for you?

1	Grilled, skinless chicken breast
2	Grilled hamburger
3	Fried pork

How do YOU feel about convenience foods

Q22. How often do you and your family eat out at restaurants/diners together?

1	Never
2	Less than once a week
3	Once a week

4	2-3 times a week
5	4-6 times a week
6	Daily

ID# _____ Date _____

What do YOU usually eat? (Please mark one box per line)

Fruits, Vegetables, and Grains	Less than 1/WEEK	Once a WEEK	2-3 times a WEEK	4-6 times a WEEK	Once a DAY	2+ a DAY
Fruit juice, like orange, apple, grape, fresh, frozen or canned. (Not sodas or other drinks)	1	2	3	4	5	6
How often do you eat any fruit, fresh or canned (not counting juice?)	1	2	3	4	5	6
Vegetable juice, like tomato juice, V-8, carrot	1	2	3	4	5	6
Green salad	1	2	3	4	5	6
Potatoes, any kind, including baked, mashed or french fried	1	2	3	4	5	6
Vegetable soup, or stew with vegetables	1	2	3	4	5	6
Any other vegetables, including string beans, peas, corn, broccoli or any other kind	1	2	3	4	5	6
Fiber cereals like Raisin Bran, Shredded Wheat or Fruit-n-Fiber	1	2	3	4	5	6
Beans such as baked beans, pinto, kidney, or lentils (not green beans)	1	2	3	4	5	6
Dark bread such as whole wheat or rye	1	2	3	4	5	6

Meats & Snacks	1 time per MONTH or less	2-3 times a MONTH	1-2 times a WEEK	3-4 times a WEEK	5+ times per WEEK
Hamburgers, ground beef, meat burritos, tacos	1	2	3	4	5
Beef or pork, such as steaks, roasts, ribs, or in sandwiches	1	2	3	4	5
Fried chicken	1	2	3	4	5
Hot dogs, or Polish or Italian sausage	1	2	3	4	5
Cold cuts, lunch meats, ham (not low-fat)	1	2	3	4	5
Bacon or breakfast sausage	1	2	3	4	5
Salad dressings (not low-fat)	1	2	3	4	5
Margarine, butter or mayo on bread or potatoes	1	2	3	4	5
Margarine, butter or oil in cooking	1	2	3	4	5
Eggs (not Egg Beaters or just egg whites)	1	2	3	4	5
Pizza	1	2	3	4	5
Cheese, cheese spread (not low-fat)	1	2	3	4	5
Whole milk	1	2	3	4	5
French fries, fried potatoes	1	2	3	4	5
Corn chips, potato chips, popcorn, crackers	1	2	3	4	5
Doughnuts, pastries, cake, cookies (not low-fat)	1	2	3	4	5
Ice cream (not sherbet or non-fat)	1	2	3	4	5

Q22. What other foods do you usually eat that were not listed:

ID# _____ Date _____

How do YOU feel about the cooking course.....?

List 3 things you like about the cooking course.

1)

2)

3)

List 3 things to improve and make the cooking course better.

1)

2)

3)

What was your favorite lesson and favorite recipe we discussed in class?

What days and time for the cooking classes would have been better for your schedule?

Any other comments...

Thank you for taking the time to complete this questionnaire!

CAL POLY

Building Better Bodies